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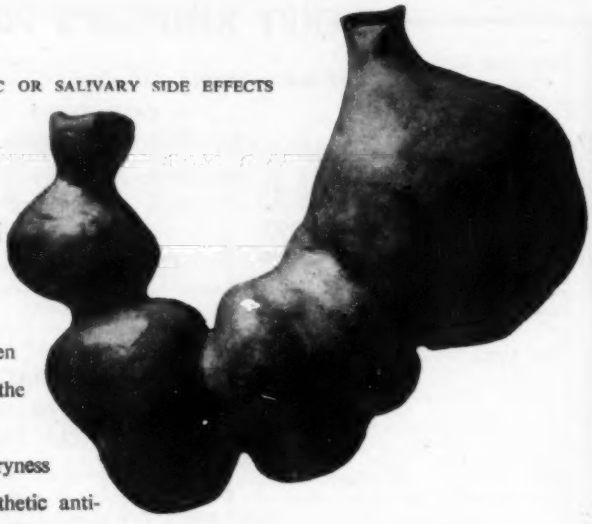

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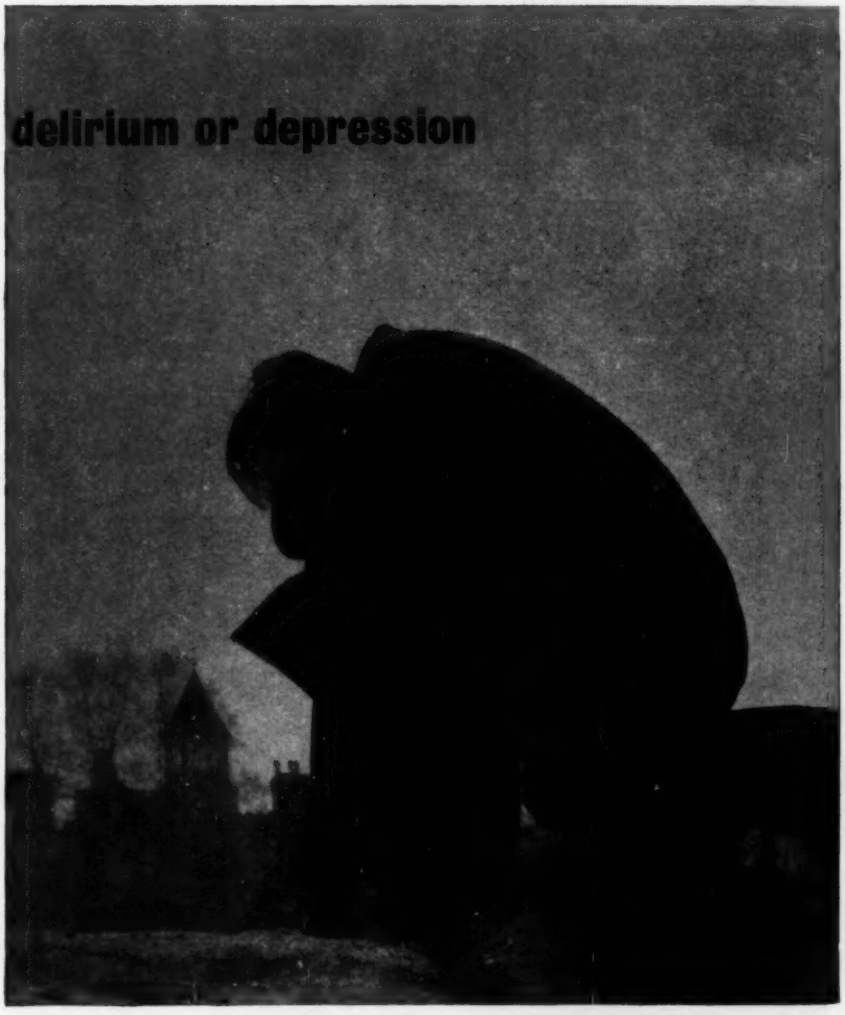

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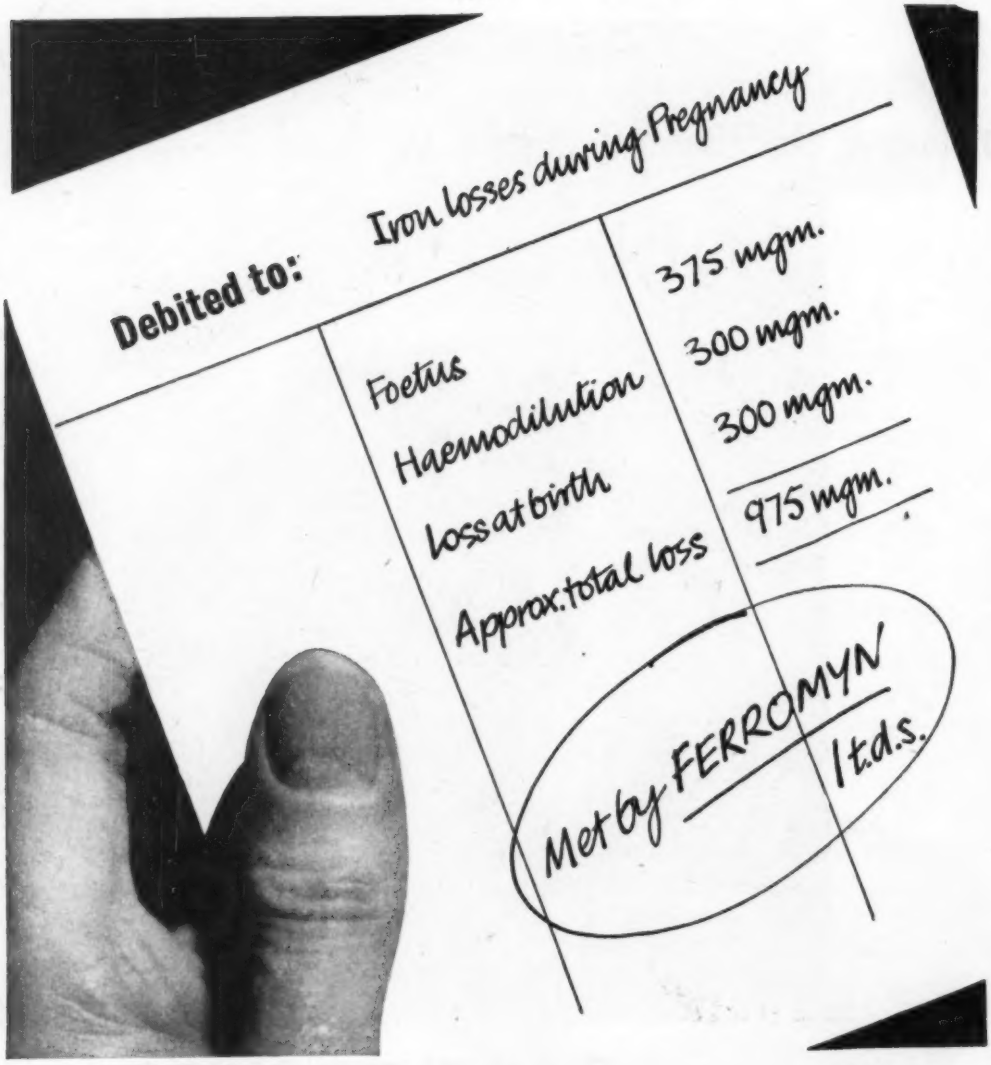

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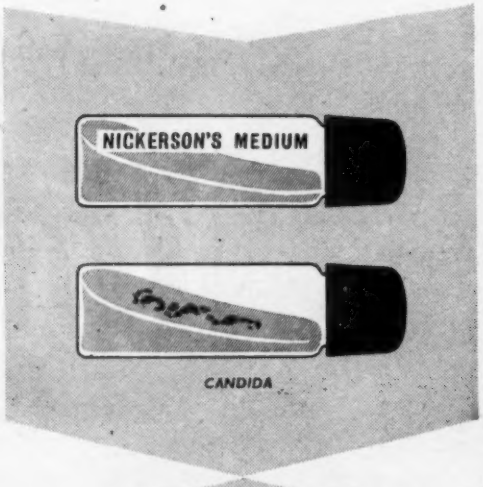

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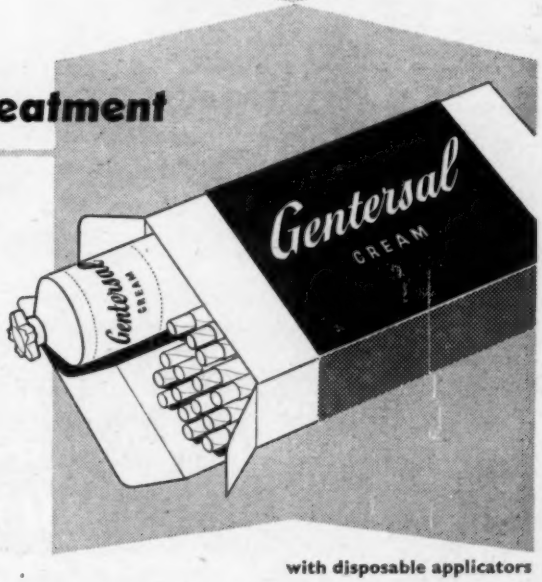

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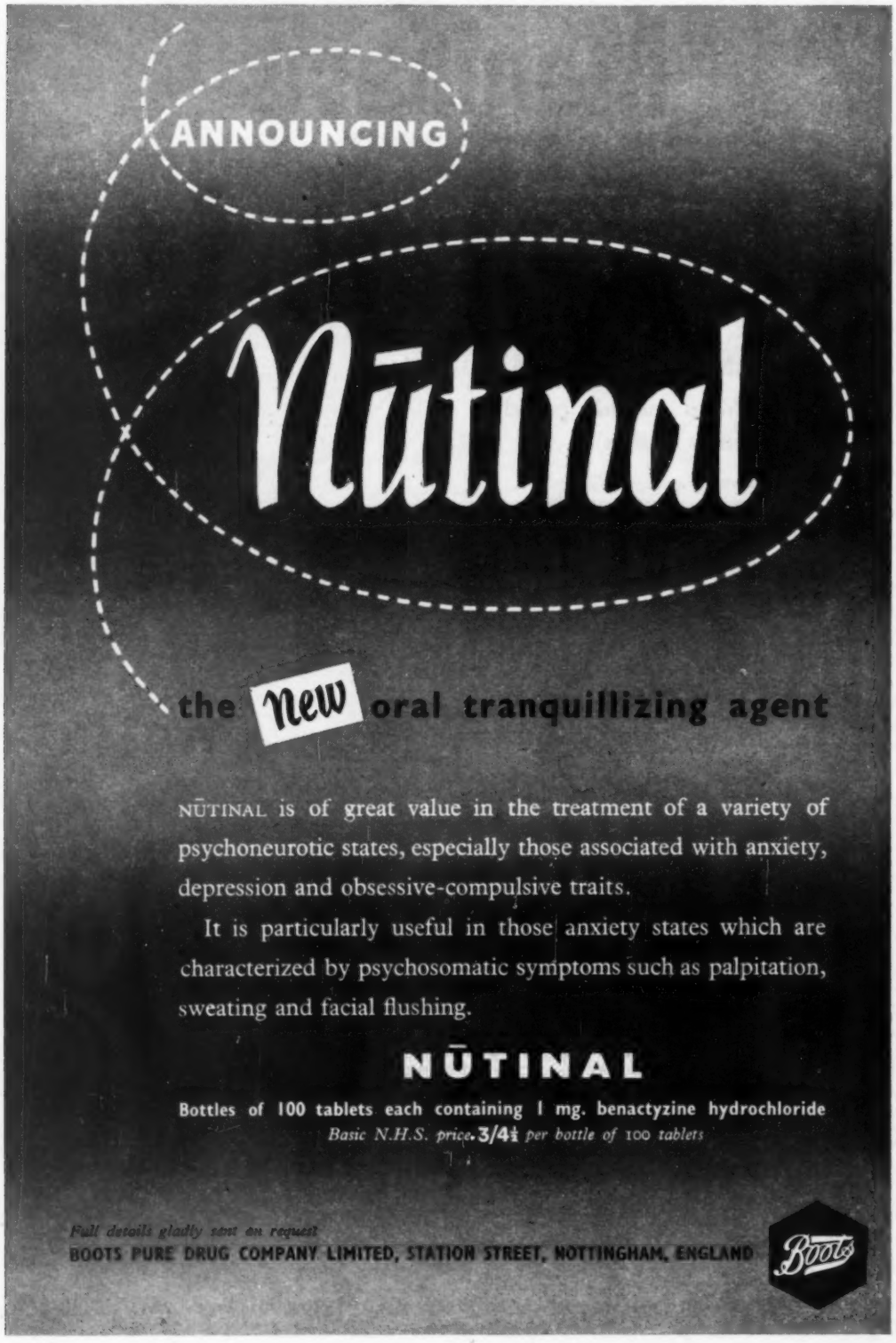
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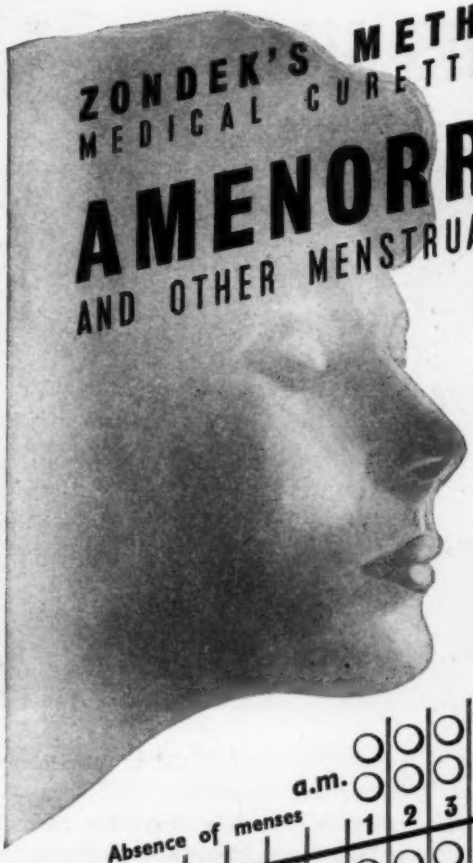

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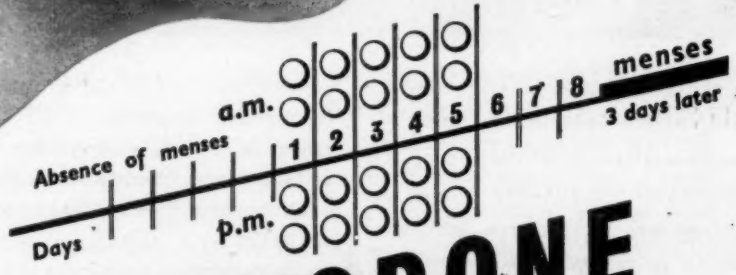

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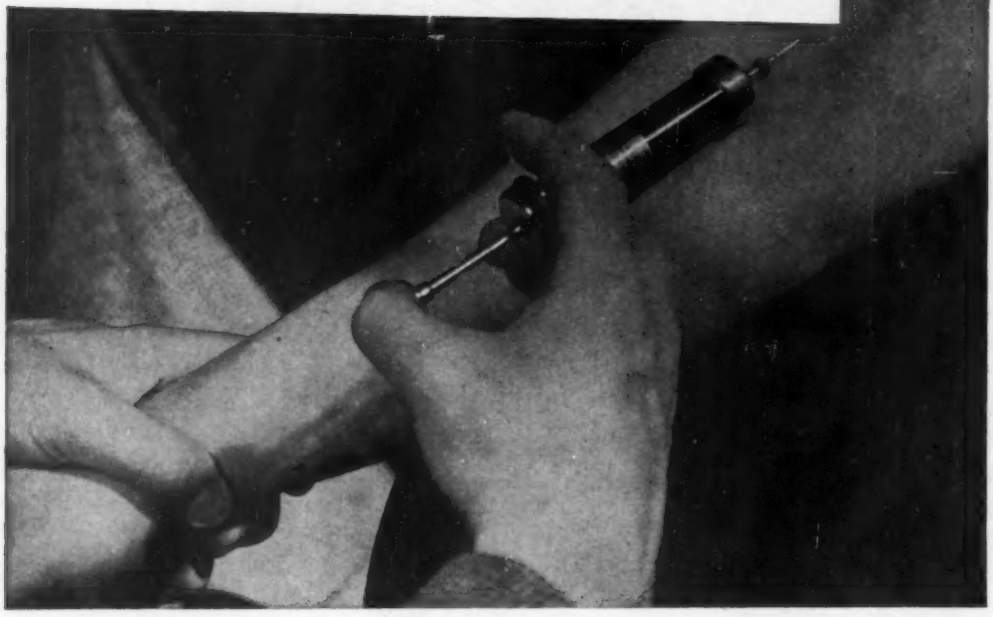

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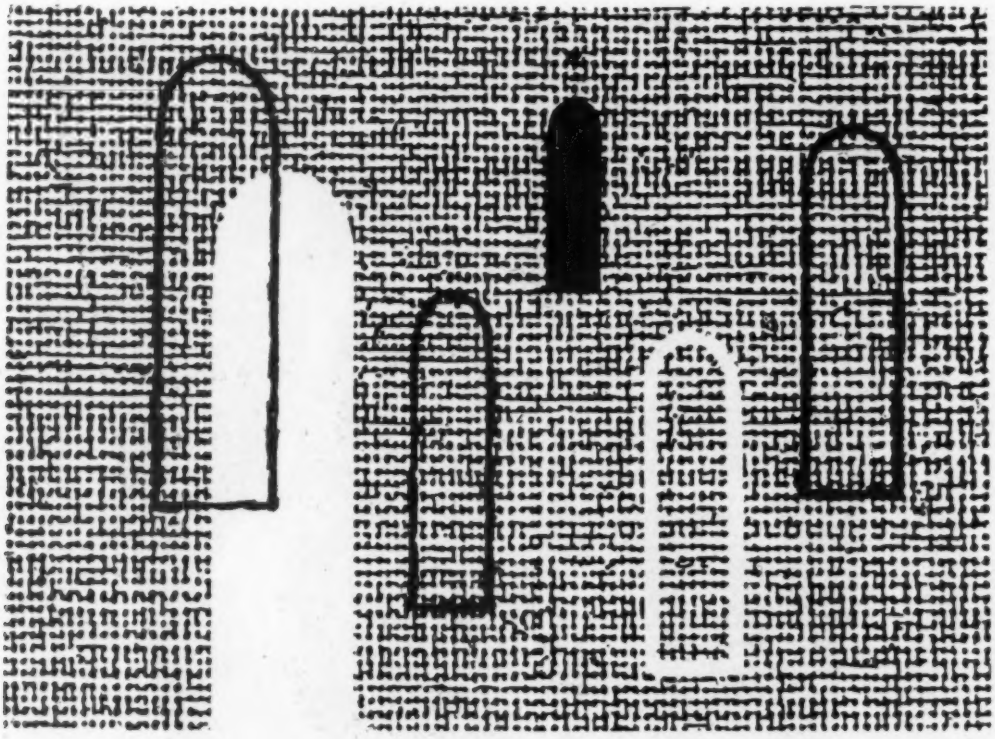

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The Herball, John Gerard, 1633, p.1297

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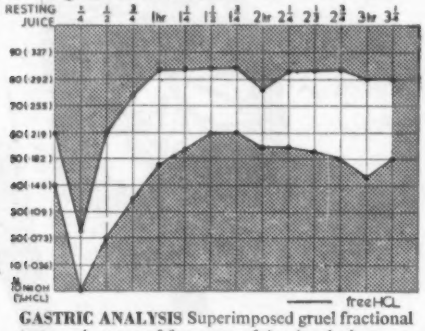

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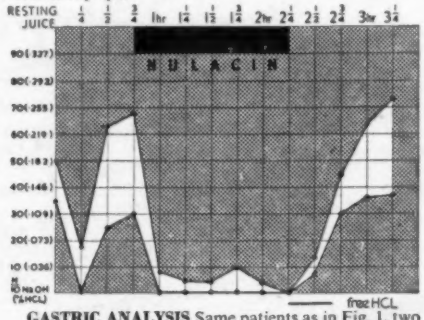

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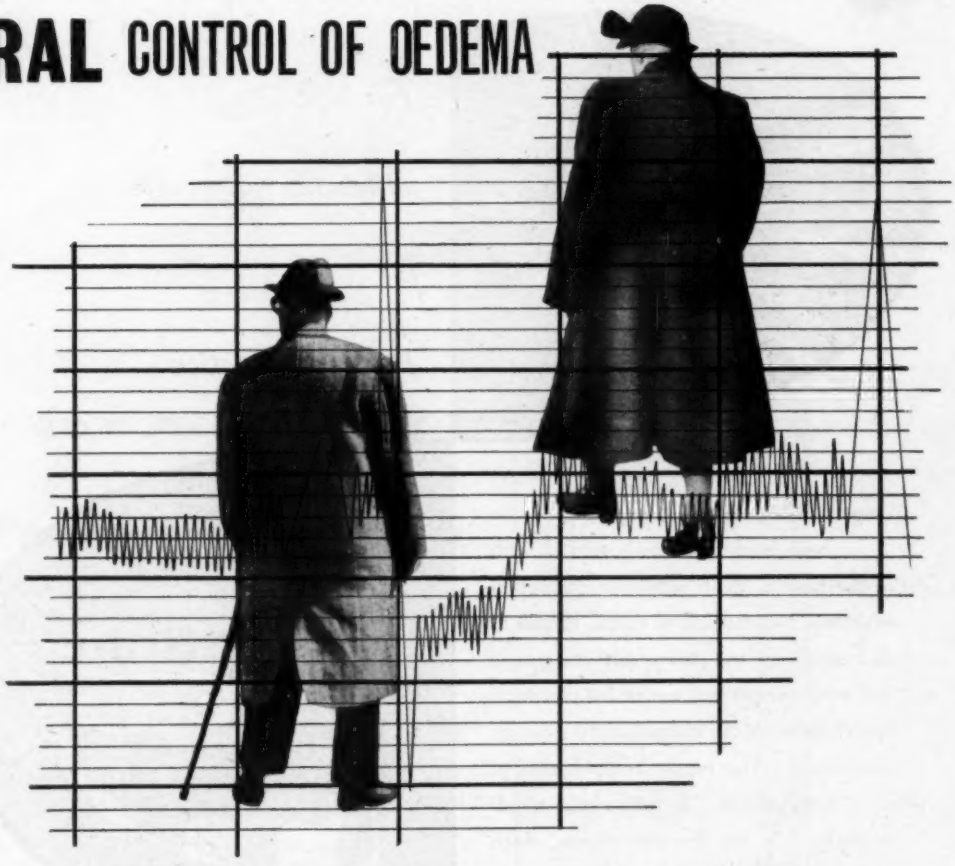

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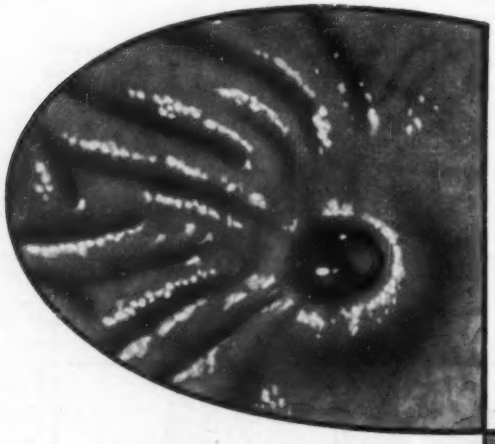

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1. *Lancet* (1955) ii, 1223.
2. *North Carolina Med. J.* (1955) 16, 4, 130.

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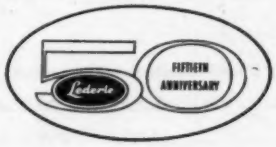

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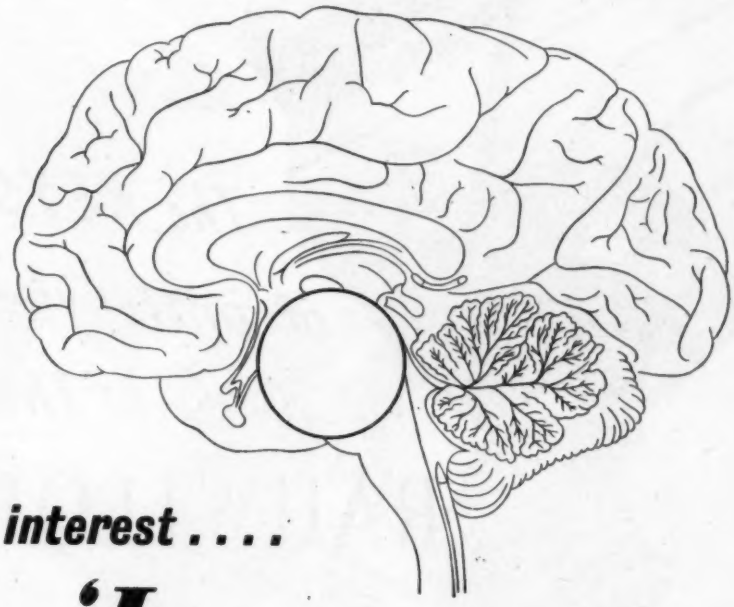

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LOBECTOMY FOR BRONCHIAL CARCINOMA

J. R. BELCHER
M.S. Lond., F.R.C.S.
SURGEON, LONDON CHEST HOSPITAL; ASSISTANT THORACIC SURGEON, MIDDLESEX HOSPITAL, LONDON

SINCE 1933, when Graham first successfully resected a bronchial carcinoma (Graham and Singer 1933), the standard operation for this condition has been pneumonectomy. Allison (1946), Brock (1948), and Brock and Whytehead (1955) combined pneumonectomy with more extensive dissection of the mediastinum in an effort to achieve truly radical removal of the neoplasm.

Pneumonectomy still carries a high mortality. Moreover, removal of so much pulmonary tissue necessarily limits the patient's activities, and renders him increasingly liable to become a respiratory cripple. On the other hand, lobectomy has been regarded as quite inadequate, and only one paper specifically on this operation has appeared in the English language since 1949: in 1950 Effler described the results in 5 cases.

Nevertheless lobectomy has been widely practised, for most reports on the treatment of bronchial carcinoma refer to some patients treated by this operation. Sellors (1955) includes 86 cases; there were 74 in the series analysed by Bignall and Moon (1955); Churchill et al. (1950) refer to 57, Boyd et al. (1954) to 32, and Therkelsen (1952) to 12. All these workers note that the results of the operation are good, but this they attribute to careful selection of the patients: they recommend the procedure only for those with small peripheral tumours, for the aged, and for those with a low respiratory reserve.

Material

This account of lobectomy for bronchial carcinoma is based on the work of the following surgeons (the number of cases contributed by each is shown in parentheses): K. Mullard (35), G. Cruikshank (32), C. A. Jackson (32), M. Bates (26), A. M. Macarthur (20), R. Abbey Smith (14), E. F. Chin (11), M. M. Brown (11), K. Harrison (10), I. M. Hill (8), B. P. Moore (8), L. Bromley (6), H. R. S. Harley (2), and myself (49). The 1st case was operated on more than six years ago, and the last in May, 1954. In all, 264 patients were subjected to lobectomy. All the facts on which this analysis is based were collected by the surgeons concerned.

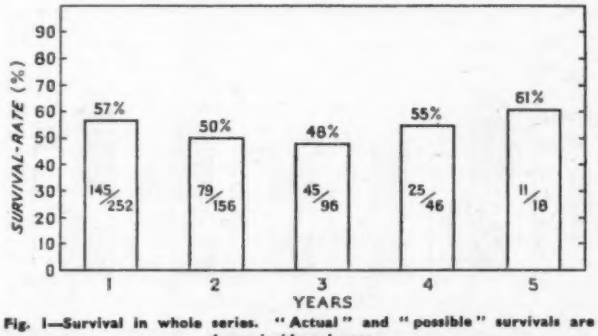

Fig. 1—Survival in whole series. "Actual" and "possible" survivals are shown inside columns.

19 (7%) of the patients were women. The distribution of the patients by age-groups was as follows:

31–40	41–50	51–60	61–70	71+
10 (4%)	55 (21%)	117 (43%)	77 (30%)	5 (2%)

Method of Analysis

Survival-rates have been recorded as follows:

$$\frac{\text{Actual survival}}{\text{Possible survival}} \times 100.$$

The "*possible survival*" consists of the total number of patients operated on in each year, less those who died as a direct result of the operation but including those who died later from causes other than carcinoma of the bronchus.

The "*actual survival*" consists of those patients operated on in the twelve-month period concerned who were still alive at the time of analysis.

The figures have been recorded on a cumulative basis.

Results

Fig. 1 shows the survival-rates for the whole series. Of the 264 patients, 12 died at or soon after operation; and of the remaining 252, 145 (57%) have survived for a year or more. Of the 156 operated on two or more years ago 79 (50%) survive; of 96 operated on three or more years ago 45 (48%) survive; of 46 operated on four or more years ago, 25 (55%) survive; and of 18 operated on five or more years ago 11 (61%) survive.

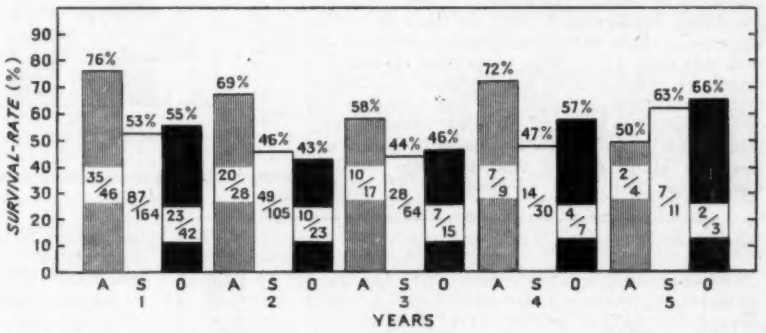

Fig. 2—Influence of cell type on survival-rate. A = adenocarcinoma. S = squamous carcinoma. O = undifferentiated carcinoma.

Influence of Cell Type on Results

Although many pathologists were involved in this investigation, there was a wide measure of agreement as to the histological classification of the tumours. Three types were recognised: adenocarcinoma, squamous carcinoma, and undifferentiated carcinoma. Tumours sometimes described as "polygonal cell" and as "transitional cell" carcinomas have been included in the "squamous" group; tumours described as "alveolar cell" and as "columnar cell" have been classified as "adenocarcinomas."

Of the 264 patients 172 (66%) had squamous carcinomas, 49 (18%) adenocarcinomas, and 43 (16%) undifferentiated tumours. These proportions are almost identical with those reported by Walter and Pryce (1955) and show how little the cell type of bronchial carcinoma varies with its site.

Fig. 2 shows the results according to cell type. The patients with adenocarcinoma have the best survival-rate (69% at two years), but those with undifferentiated tumours do not appear to have nearly as bad a prognosis when lobectomy has been possible as they do when the lesion is more extensive; their two-year survival-rate is very

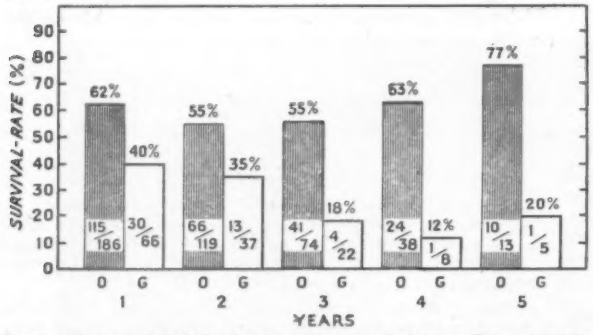

Fig. 3—Influence of glandular involvement on survival-rate. O = no glandular involvement. G = glandular metastases found.

similar to that for patients with squamous-cell tumours (43% and 46% respectively).

Influence of Glandular Involvement

The dominant influence of mediastinal-node involvement on prognosis has been stressed by many workers; Bignall and Moon (1955) state that the five-year survival-rate of patients without glandular involvement was as high as 48%, whereas in those with glandular involvement the rate was only 11%. The proportion of patients found at operation to have glands containing metastases depends largely on the thoroughness of the search for them (H. C. Nohl, personal communication). In only a few cases in this series was the hilum of the resected lung carefully dissected; nor were sections of all glands examined routinely; yet histological evidence of glandular metastases was found in 70 (27%) cases.

Fig. 3 compares cases in which no glandular metastases were found with those in which glandular involvement was proved histologically. The survival-rate after two years was very considerably lower in the latter group (35% as against 54%), and it fell off even more one year later (18% as against 55%). Since only 30% of the patients with glandular involvement eventually died because of local metastases, the finding of malignant glands in a resected specimen probably indicates that the disease is already widespread.

Circumscribed and Uncircumscribed Tumours

Both Raeburn and Spencer (1953) and Walter and Pryce (1955) have emphasised that the majority of bronchial carcinomas originate at the periphery. There is, however, a clinical entity often described as a "peripheral" carcinoma; the lesion is peculiar in that the greater part of the shadow cast on a radiograph is due to tumour tissue, and that it is far more commonly associated with pulmonary osteo-arthropathy than are more centrally placed tumours (Semple and McCluskie 1955). In order to avoid confusion the term "circumscribed," originally used by Rabin and Neuhof (1934), has been applied to these characteristic round lesions. They form the greater part (76%) of the present series.

There was no significant difference between the proportions of the three cell types in the two groups, but glandular involvement was a little commoner in the uncircumscribed tumours (31% as against 24%). Fig. 4 shows that the "uncircumscribed" tumours had a slightly better prognosis (53%, as against 50%, survived for more than two years). This difference is interesting although probably not significant.

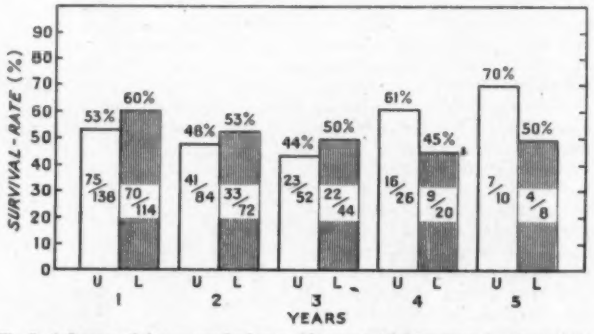

Fig. 5—Influence of site on survival-rate. U = upper-lobe tumours. L = lower-lobe tumours.

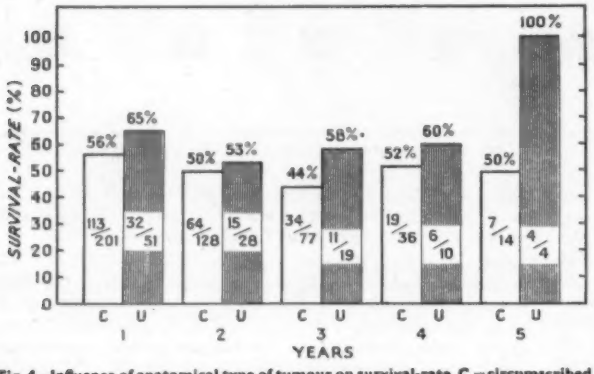

Fig. 4—Influence of anatomical type of tumour on survival-rate. C = circumscribed lesions. U = uncircumscribed lesions.

Influence of Site of Tumour

The 264 tumours in this series were evenly distributed throughout the lungs; and there was no difference between the prognosis on the two sides, nor between the upper and the lower lobes (fig. 5). In the cases analysed by Bignall and Moon (1955) tumours situated in the left lower lobe were associated with the lowest survival-rate; but the majority of the lesions in this series were of the circumscribed type, in which the factor of proximity of the tumour to vital structures influencing operability, and so prognosis, did not come into play.

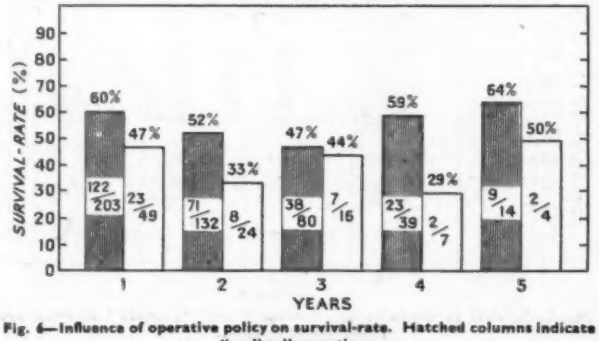

Fig. 6—Influence of operative policy on survival-rate. Hatched columns indicate "policy" resections.

TABLE I—DEATHS DURING AND AFTER OPERATION

Cause	No.	% of all deaths	% of all cases
Operative	12	10	4
Other causes	19	16	7
General metastases	55	47	21
Local metastases	27	23	10
Unknown	6	4	2

Policy and Palliation Resections

Cases treated by lobectomy as a policy were compared with those in which the operation was dictated by expediency. In the latter group fell those in which the surgeon felt that the operation of choice was pneumonectomy, but in which reasons, such as respiratory insufficiency or advanced age, justified lobectomy alone as a palliative procedure. Such cases are usually recommended for lobectomy.

These two groups are compared in fig. 6. The 264 cases included only 49 in which the operation was considered to have been palliative. As might be expected their survival-rate was lower than that of cases where the operation was planned. Nevertheless 33% survived for more than two years, compared with 52% of those in whom the operation was deliberate.

Cause of Death

The cause of death was known with reasonable certainty in 113 of the 119 patients who died during or at any time after operation. Table I shows how these deaths were distributed.

The operative mortality was much lower than that in any of the series of pneumonectomy cases recently published, and a quarter of these deaths were of patients whose operation was regarded as palliative.

Of the 19 deaths due to causes other than carcinoma, 4 were attributed to respiratory failure; it seems certain

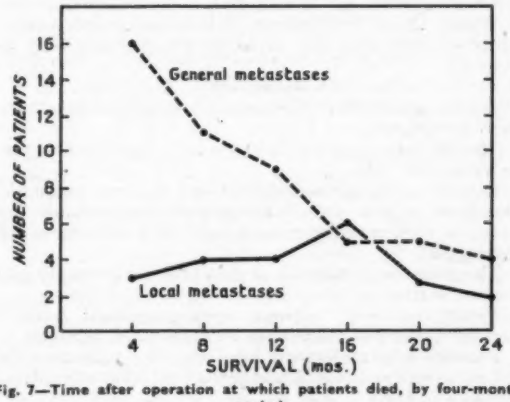

Fig. 7—Time after operation at which patients died, by four-month periods.

that had pneumonectomy been carried out on any of these patients, they would not have survived the operation. The survival of this group must to some extent account for the lower mortality of lobectomy, since a large proportion of the patients who die after pneumonectomy do so as a result of respiratory failure. There were 6 late deaths due to coronary thrombosis, and the other 9 patients succumbed to various other causes, including carcinoma of the bladder.

Death due to Metastases

In assessing the place of lobectomy in the treatment of bronchial carcinoma it is essential to ascertain the proportion of cases in which local recurrences develop, since it may be argued that with the more limited operation this form of metastases must be more likely.

In the present series the diagnosis of general metastases was based largely on clinical manifestations, and in only some of the cases was general spread confirmed at necropsy. The clinical evidence of such metastases is, however, usually sufficiently strong for valid assumptions to be based upon it.

The clinical evidence of local metastases is usually clearer, and it is certainly more obvious after lobectomy than after pneumonectomy; whereas after pneumonectomy a local metastasis is very unlikely to be radiographically apparent, after lobectomy the shadow cast by a local recurrence may be visible at an early stage and could seldom be missed if death were due to it.

Finally in attempting to make the distinction between death from local metastases and death from general metastases, patients who were found to have secondary tumours in either lung were classed with the "local" group, whereas the 4 cases in which necropsy revealed both local and general metastases were classed with the "general" group, since each of these 4 patients died within six months of their operation.

55 late deaths were attributed to general metastases, and 27 to local metastases. Thus 47% of the 119 patients who died were almost certain to have done so whatever form of resection had been carried out. In those whose death was due to general and to local metastases, glandular involvement was found as follows:

	Glandular involvement	
	55 deaths from general metastases	*27 deaths from local metastases*
Present	21	9
Absent	34	18

There is little difference between the two groups.

The fact that so many of the patients with *general metastases* died within such a short time after the operation is strong evidence that the secondaries were already present at the time. Fig. 7 shows the period after operation at which these patients died, compared with similar figures for those who succumbed to local metastases. The figures show a close resemblance to those of Aylwin (1951), whose cases had been treated by pneumonectomy.

Of the patients who died of general metastases, 36% did so within a year of operation, and 90% within two years. Ochsner et al. (1948) pointed out that if a patient survived for two years after a resection for carcinoma, he had a very good chance of living for five years; this fact is amply borne out by these figures, and for this reason the results of different methods of treating bronchial carcinoma should not be compared until at least two years after operation.

Of the 119 patients who have died since their operation, 27 succumbed to *local metastases*—that is, 10% of the whole series. The period of survival was different from that of the patients who had more widespread secondaries in that the deaths were more evenly spread over the first two years (fig. 6), reaching a small peak at sixteen months. Possibly if a more radical removal of the glands had been undertaken some of these patients might have survived, but nevertheless the smallness of the proportion who died from this cause, and its close correspondence to that in the series of pneumonectomies described by Aylwin (1951), suggest that there are no grounds for rejecting lobectomy on this count.

Patients with pulmonary secondaries were a particularly interesting subgroup of those with local metastases. In all there were 12 such cases, and, although no comparative figures are available, my impression is that this occurrence is rare after pneumonectomy. Of the 12, 3 are still alive, 1 after removal of a secondary from the other lung. In 6 cases there was recurrence on the same side as the original operation, and in 3 of these there were also secondaries on the other side; these cases are easily accounted for by retrograde lymphatic spread, or by the fact that tumour tissue was left behind in the residual lobe. The other 6, where the recurrences were on the side opposite to that of the operation, are less easy to explain; in each of these cases the tumour was a

TABLE II—SURVIVAL OF PATIENTS TWO AND FIVE YEARS AFTER OPERATION, ACCORDING TO PRESENCE OR ABSENCE OF GLANDULAR INVOLVEMENT AT OPERATION

Group	Glands involved		Glands uninvolved	
	2 yr. (%)	5 yr. (%)	2 yr. (%)	5 yr. (%)
Bignall and Moon (1955):				
Pneumonectomy ..	25	16	64	49
Lobectomy	40	25	57	47
Present series:				
Lobectomy	35	20	55	77

squamous carcinoma, and possibly bronchogenic spread took place at the time of operation.

Discussion

The results of lobectomy in this series are as good as, if not far better than, those reported for pneumonectomy, even without considering the obvious advantages of a lower operative mortality and slighter loss of pulmonary function.

It may be argued that the patients were selected when the tumour was early and localised, and before glands were involved, and that accordingly excellent results might be expected. Indeed, glandular metastases were found in only 27% of cases, compared with 58% in the series of Bignall and Moon (1955). These workers point out, however, that comparison of the results of lobectomy and pneumonectomy on the basis of the presence or absence of glandular metastases fails to show any difference which would favour the more extensive operation—a conclusion that is borne out by the figures in this series (table II).

It was felt, therefore, that the survival figures for the pneumonectomies done by the same surgeons over the same period as the lobectomies should be collected, in order to establish the total survival for all resections. If this was reasonably close to the survival after pneumonectomy in other series, then there would be good ground for favouring "policy lobectomy."

The ratio of pneumonectomy to lobectomy was found to be 4 : 1. There was wide variation between the results of pneumonectomy among the various surgeons; but there was close similarity between the lobectomy figures. The reason for this discrepancy is not far to seek; the indications for lobectomy vary little, whereas there may be considerable difference of opinion as to what patients are suitable for pneumonectomy and how determined an effort should be made to remove the carcinoma. The survival-rates for the conservative surgeons will necessarily be better than those of their more radical colleagues.

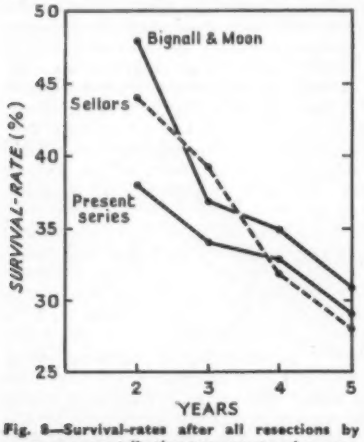

Fig. 8—Survival-rates after all resections by surgeons contributing to present series, compared with analyses by Bignall and Moon (1955) and Sellors (1955).

Fig. 8 shows the results of this investigation. In all, 859 operations were considered. The method of analysis has been different in the three series; but, in order to make the figures as nearly comparable as possible, the operative mortality has been extracted from Sellors's (1955) figures, and the figures of Bignall and Moon (1955) have been reanalysed by almost the same method as was used in the present series (A. J. Moon, personal communication). The only remaining difference in the analyses is that in the two series with which the present one is compared all the survivors at a given period were included whether or not they died later: in the present series only those still alive at the time of analysis were considered. It is apparent that there is a close similarity between the three series in the four-year and five-year periods, when the great majority of the patients who were going to die of their carcinoma had done so; but earlier than this the different method of analysis had caused a considerable discrepancy.

The influence of glandular metastases on the prognosis in bronchial carcinoma cannot be overstressed. The question arises: Can a radical lobectomy be performed? Several reports have described the lymphatic drainage of the *lung*, and Borrie (1952) traced the lymphatic pathways of individual lobes as far as the broncho-pulmonary glands; but until these pathways have been traced still further to the mediastinal glands the planning of a radical lobectomy will not be feasible. Recently Nohl (personal communication) has found that the drainage of individual lobes is consistent. Extension of this work may show that it is as irrational to recommend pneumonectomy for an upper-lobe tumour as it would be to remove the entire colon for carcinoma of the sigmoid.

Boyd et al. (1954) have already described a form of "radical lobectomy," but the operation cannot become established until lymphatic spread has been further investigated and until more information is available about the submucus spread in the bronchus proximal to the carcinoma.

The present series appears to justify continuation of the policy of "lobectomy where possible" in the treatment of bronchial carcinoma. It is hoped that when more is known about local spread of the disease the present figure of 10% of deaths from local metastases may be reduced.

Summary

The results of 264 lobectomies for bronchial carcinoma were investigated.

The two-year survival-rate was 50% and the five-year survival-rate 61%.

Patients with adenocarcinoma had the best prognosis, and there was no difference between the prognosis for patients with undifferentiated and with squamous-cell carcinoma.

The presence or absence of glandular involvement had a close bearing on prognosis.

Uncircumscribed tumours were associated with a slightly better prognosis than circumscribed tumours.

Patients who underwent lobectomy for palliation did not do as well as those in whom the operation was carried out as a policy.

The site of the tumour was unrelated to prognosis.

Of the 119 deaths, 47% were due to general metastases, 23% to local metastases, 10% to the operation, and 16% to causes other than carcinoma.

90% of the patients who died of metastases did so within two years of operation.

There is probably a place for "lobectomy where possible" in the treatment of bronchial carcinoma.

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SURGICAL TREATMENT OF PORTAL HYPERTENSION

RESULTS IN 64 CASES

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THAT assessment of the benefit resulting from operations for portal hypertension presents a difficult problem is evident from the widely divergent views (Blakemore 1951, Witts 1953). The reasons for this difficulty lie in the composite nature of the disorder when it is associated with hepatic disease. Some of these reasons are illustrated by the following brief case-records.

Case 1.—An elderly man was seen for another condition 26 years after splenectomy elsewhere for hæmatemesis and "Banti's syndrome." Bleeding had recurred at intervals for 5 years after the operation, but he had remained symptom-free during the succeeding 21 years (Learmonth 1951).

The point illustrated by this case is that the bleeding vessels in the œsophagus or their feeders may undergo spontaneous obliteration.

Case 2.—A woman, aged 27 years, experienced three episodes of hæmatemesis during the 6th year after a severe and prolonged attack of toxic hepatitis. Splenectomy, left nephrectomy, and splenorenal anastomosis (end-to-end, using a 'Vitallium' tube) were performed in December, 1946. She married and lived a normal life for 7½ years. There was mild melæna in October, 1952, and more severe bleeding which led to her death in August, 1954. Necropsy showed that the anastomosis had been occluded for a long time.

Evidently there may be complete freedom from symptoms for many years after a technically imperfect operation.

Case 3.—A girl, aged 8 years, underwent splenectomy at the hands of the late Sir David Wilkie in 1934. The liver was noted to be cirrhotic. In 1954 she was seen again because of hæmatemesis which, it was learned, had recurred frequently in the intervening 20 years.

Repeated hæmatemesis is apparently not incompatible with long survival even in patients known to have hepatic disease.

These examples indicate the need for a long follow-up of many cases in order to assess accurately the value of surgical treatment in portal hypertension. However, such is the interest of this condition that we believe it justifiable to review now the progress of 64 cases of intrahepatic portal obstruction treated in the professorial surgical unit of the Royal Infirmary of Edinburgh during the 8 years up to the end of 1953. 68 operations were performed on these patients, as follows: portacaval anastomosis, 7; splenectomy and splenorenal anastomosis, 19; splenectomy alone, 27; limited œsophagogastrectomy, 8; splenic arterial ligature, 4; other operations, 3.

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Criteria for Assessment

We have accepted four criteria for assessing the effectiveness of operations in portal hypertension: (1) a substantial reduction after operation in the incidence and severity of bleeding from varices in the lower œsophagus and the fundus of the stomach; (2) no demonstrable adverse effect on metabolic functions, and in particular on hepatic function; (3) improvement in the blood picture; and (4) improved chances of survival.

Incidence of Hæmorrhage

There is no conclusive evidence on this point, because the incidence, severity, and effect of hæmorrhage in chronic hepatic disease are unpredictable and control figures from medically treated patients are concerned with mortality only. In about 40% of reported cases the hæmorrhage is terminal (Ratnoff and Patek 1942, Reynell 1951), and a further 30% die within a year of the first hæmatemesis. These are, in general, cases with severe hepatic damage. The remaining 30% form a group in which hepatic disease may not even be suspected till hæmatemesis occurs.

TABLE I—INCIDENCE OF GASTRO-ŒSOPHAGEAL BLEEDING AFTER OPERATION IN PORTAL HYPERTENSION DUE TO HEPATIC DISEASE

Operation	Cases with preoperative bleeding		Cases without previous bleeding	
	No.	No. with postop. bleeding	No.	No. with postop. bleeding
Portal-systemic venous anastomosis	22	10	4	0
Splenectomy	15*†§	11	12	2
Splenic arterial ligation	2*‡	2	2	1
Œsophagogastrectomy	8†‡§	0	..	..
Other	..	..	3	0
Total	47	23	21	3

*, †, ‡, § = 4 patients common to two categories.

The incidence of bleeding after operation in the present series is shown in table I, from which the following conclusions are drawn:

1. Bleeding after operations for portal hypertension occurred much more frequently in patients who presented with hæmatemesis, irrespective of the operation performed.

2. After splenectomy alone the incidence of bleeding was very high when hæmatemesis had been a presenting feature, and was low if alimentary hæmorrhage had not been detected before operation. Similar results have been recorded by Pemberton and Kiernan (1945). The reason for this difference appears to be that once the anatomical pattern of the collateral circulation has been established in portal hypertension, it does not change (Macpherson 1953).

3. In only 1 of the 10 cases with bleeding after portal systemic venous anastomosis was the anastomosis observed to be patent; in 5 it was seen at necropsy to have been occluded; in 4 its condition was not known, but as 3 of these were splenorenal anastomoses performed with a vitallium tube they probably did not remain patent. In 1 of these 4 cases the bleeding was from an eroded artery in an acute gastric ulcer and was not attributable to the portal hypertension.

4. The recurrence of bleeding after operation was as variable and unpredictable as in the cases treated medically. The earliest onset was in the immediate post-operation period and the longest interval was 6 years.

5. Splenic arterial ligature has proved ineffective in preventing further hæmatemesis, but there has been no recurrence of bleeding over periods of up to 2 years after limited œsophagogastrectomy. Because the follow-up is so brief, this statement must be regarded as a progress report only.

Hepatic Function

In a report on hepatic function after operations for portal hypertension (Macpherson et al. 1954) we showed that: (1) diversion of the portal blood-stream from the

TABLE II—HEPATIC FUNCTION BEFORE AND AFTER OPERATION IN PORTAL HYPERTENSION (ALL CASES)

—	Follow-up (yr.)		
	1	3	5
Plasma-proteins (g. per 100 ml.):			
Albumin ..	3·40 ± 0·58 3·81 ± 0·71 (26) P<0·05	3·57 ± 0·76 3·87 ± 0·50 (15) P<0·4	4·06 ± 0·54 3·84 ± 0·65 (7) P<0·6
Globulin ..	2·95 ± 0·83 3·21 ± 0·92 (26) P<0·4	2·65 ± 0·40 2·91 ± 0·75 (15) P<0·4	2·70 ± 0·97 3·30 ± 0·61 (7) P<0·2
Total ..	6·33 ± 1·00 7·06 ± 0·85 (26) P<0·01	6·24 ± 1·15 6·80 ± 0·86 (15) P<0·2	6·78 ± 1·30 7·14 ± 0·62 (7) P<0·5
Serum-bilirubin (mg. per 100 ml.)	0·83 (0·1–1·4) 1·18 (0·2–5·5) (26)	0·81 (0·1–1·5) 0·81 (0·1–1·3) (16)	0·13 (0·3–1·4) 0·55 (0·1–2·1) (8)
Alkaline phosphatase (units per 100 ml.)	12·4 (3–66) 14·5 (3–45) (25)	15·2 (3–66) 15·2 (3–33) (14)	11·6 (3–14) 14·4 (7–27) (5)

Values given are means, ± S.D. or range; upper values preoperative, lower values postoperative. Number of cases in italic numerals in parentheses.
P values for difference between mean results at x years and before operation calculated by "Student's" t test.

cirrhotic liver was not followed by any greater immediate deterioration in hepatic function than that after other operations of comparable severity in patients with cirrhosis; and (2) there was no significant difference between the results of hepatic function tests before and at 1–2 years after operation in patients who survived. The follow-up of these patients has now been extended and the findings essentially confirm our previous report.

The results of hepatic function tests immediately before operation have been compared with those at intervals of approximately 12 (11–17), 36 (33–40), and 60 (50–70) months after operation (table II). The tests and the analytical methods have already been described (Macpherson et al. 1954). For each test the mean post-operative values are compared with the corresponding mean preoperative values. When the scatter in the values is small it has been expressed as a standard deviation; when large, as in the values for alkaline phosphatase and serum-bilirubin, as a range.

The analysis (table II) shows that there is a significant difference between the results of the tests of hepatic function before and at the stated intervals after operation in 2 instances only (the plasma-albumin and total-protein levels at 1 year). The changes in all other tests are either not significant, where they have been calculated, or obviously insignificant when only ranges are given. Thus operations for portal hypertension have not had permanent or progressive adverse effects on hepatic function in patients who survive them for up to 5 years.

In table III results are analysed according to whether the operation was splenectomy alone or a portal-systemic anastomosis. Apart from the rise in the plasma-albumin level at 3 years after splenectomy alone, none of the changes is significant. It may be noted that in the patients submitted to splenectomy alone the mean preoperative values for albumin and total protein were lower than in those submitted to portal-systemic anastomosis. However, the difference was significant only for albumin ($P<0·01$ and $P<0·1$ respectively). The corresponding values for globulin were higher, but not significantly so ($P<0·7$). Other values did not differ appreciably. These differences are probably attributable to the fact that the less severe operation was deliberately performed in some patients who were considered very poor surgical risks. After operation the differences between the two groups became smaller. It may be concluded that deviation of portal blood from the cirrhotic liver, whether partly by splenorenal (5 cases) or entirely by portacaval (1 case) anastomosis, did not cause any significant deterioration of hepatic function over a period of 3 years after operation.

One further analysis of the results was carried out. Other workers who have reported the progress under medical treatment of patients with cirrhosis (Post and Patek 1942, Ricketts et al. 1950, Douglass and Snell 1950) have observed a correlation between the level of the plasma-albumin when the patient was first seen and the prognosis. In the present series no significant correlation was found between the survival-times after operation and the preoperative values for albumin, globulin, and total protein ($r=+0·20$, $+0·08$, and $+0·26$ respectively).

Peripheral-blood Picture

The short-term effects of operation on the peripheral-blood picture in 58 cases of portal hypertension have already been described (Macpherson and Innes 1953).

TABLE III—HEPATIC FUNCTION BEFORE AND AFTER OPERATION IN PORTAL HYPERTENSION: ANALYSIS BY OPERATION

—	Splenectomy		Portal-systemic anastomosis	
	Follow-up (yr.)			
	1	3	1	3
Plasma-proteins (g. per 100 ml.):				
Albumin ..	3·06 ± 0·52 3·56 ± 0·74 (14) P<0·1	3·08 ± 0·52 3·82 ± 0·56 (8) P<0·01	3·81 ± 0·40 4·00 ± 0·56 (9) P<0·5	4·42 ± 0·22 4·13 ± 0·31 (6) P<0·3
Globulin ..	3·14 ± 0·92 3·44 ± 0·92 (14) P<0·5	3·04 ± 0·71 3·23 ± 0·88 (9) P<0·7	2·69 ± 0·69 3·02 ± 0·82 (9) P<0·4	2·05 ± 0·55 2·43 ± 0·50 (6) P<0·4
Total ..	6·17 ± 1·64 7·04 ± 1·00 (14) P<0·2	6·16 ± 1·46 7·06 ± 1·28 (9) P<0·3	6·50 ± 1·03 7·01 ± 0·55 (9) P<0·3	6·45 ± 0·49 6·57 ± 1·13 (6) P<0·8
Serum-bilirubin (mg. per 100 ml.) ..	0·72 (0·1–1·3) 1·16 (0·2–1·3) (10)	0·79 (0·1–1·3) 0·56 (0·2–1·3) (10)	0·85 (0·1–1·4) 1·40 (0·5–2·6) (3)	1·22 (0·3–1·4) 0·68 (0·2–1·1) (6)
Alkaline phosphatase (units per 100 ml.) ..	13·5 (3–66) 17·2 (3–45) (14)	18·7 (3–66) 18·1 (3–34) (9)	11·9 (5–15) 9·5 (5–16) (3)	9·0 (5–17) 9·8 (4–18) (5)

Values given are means, ± S.D. or range; upper values preoperative, lower values postoperative. Number of cases in italic numerals in parentheses.
P values for difference between mean results at x years and before operation calculated by "Student's" t test.

TABLE IV—CIRRHOSIS WITH PORTAL HYPERTENSION: EFFECT OF SPLENECTOMY ALONE OR WITH OTHER OPERATIONS ON BLOOD PICTURE

—	Before operation	After operation		
		1 yr.	3 yr.	5 yr.
Hb (%)	64·2 ± 24·7 (34)	93·8 ± 12·7 (28) P<0·01	94·1 ± 12·3 (16) P<0·01	102·4 ± 9·8 (8) P<0·01
Red cells (million per c.mm.) ..	3·78 ± 1·08 (30)	4·65 ± 0·54 (25) P<0·01	4·53 ± 0·64 (10) P<0·01	5·30 ± 0·93 (5) P<0·01
White cells (thousands per c.mm.)	4·45 ± 1·13 (34)	10·4 ± 4·5 (25) P<0·01	10·5 ± 3·1 (16) P<0·01	10·8 ± 1·7 (7) P<0·01
Platelets (thousands per c.mm.)	137 ± 42 (28)	356 ± 186 (24) P<0·01	333 ± 96 (12) P<0·01	327 ± 69 (5) P<0·01

Values expressed as means ± S.D. Number of cases in italic numerals in parentheses.
P values for difference between x years, and before operation.

The findings demonstrated that the characteristic leucopenia and thrombocytopenia were corrected only if splenectomy was included in the operation. Relief of the portal venous congestion by portal-systemic venous anastomosis and other measures such as splenic arterial ligation produced no such improvement. The results of a longer follow-up in 34 patients with intrahepatic portal obstruction who were submitted to splenectomy either alone or as part of a more extensive operation show that these changes in the blood picture persist, an over-all improvement in the peripheral-blood picture, with a significant rise in all values, having been maintained in patients surviving such operations for periods up to 5 years (table IV). Correction of a leucopenia averaging 4000 white blood-cells per c.mm. to a sustained count of 10,000 per c.mm. would seem an important factor in increasing the ability to combat intercurrent infections. This feature has been specifically observed in 3 patients who were subject to recurrent infections of the respiratory tract. In general the number of circulating granulocytes has tended to increase in the immediate post-operation period and the number of lymphocytes to increase subsequently, so that a year or more after splenectomy the differential leucocyte-count is similar to that found before operation but the absolute figures are greater.

The improvement in the platelet-count may also have contributed to the survival of some of the patients. Spontaneous bleeding from sites other than the œsophagus is unusual in portal hypertension, even when the platelet-count is 50,000 per c.mm. or less; but it is reasonable to assume that such a thrombocytopenia renders bleeding from œsophageal varices an even more serious hazard. We consider that correction of the thrombocytopenia should be one of the aims of operation for portal hypertension.

The hæmatological records of 8 cases in which alimentary bleeding had not been detected before operation have been abstracted from the whole group (table V). The initial leucocyte and platelet counts were depressed in these cases, but the anæmia was much less prominent. Operations, which in each case included splenectomy, corrected the leucopenia and thrombocytopenia; and though the hæmoglobin level and the erythrocyte-counts rose subsequently, the increase was naturally less striking than for the whole group shown in table IV.

These observations agree with previous reports by Davidson (1934) and by us (Macpherson and Innes 1953). The balance of evidence at present suggests that in patients with intrahepatic portal obstruction the enlarged spleen plays little, if any, part in depressing the formation of erythrocytes and hæmoglobin. The anæmia probably results from a combination of causes—loss of iron and protein by alimentary bleeding, low intake and poor absorption of iron (Davidson 1934), and possibly defective utilisation because of hepatic dysfunction (Macpherson 1953). The improvement after operation in this series should probably be ascribed to the administration of adequate doses of iron, and in many of the cases to a reduction in the frequency of alimentary bleeding.

Survival

Evaluation of a method of treating a disease or one of its complications must be based on the natural history of the disease. This axiom applies especially to conditions which are the result of many different causes and which may show very varied rates of progression. Hepatic cirrhosis is such a condition. Once it has become manifest the direction and rate of change depend on many factors—perhaps in particular upon the ætiology, the response to prolonged medical treatment, and the incidence of complications. Hence, to assess the value of surgery in the treatment of portal hypertension due to hepatic cirrhosis it is essential to compare statistically the results obtained in two large groups of cases which are as nearly as possible comparable clinically and in all features of treatment other than the operation in question. Two series treated almost entirely by medical measures have been reported within the past 15 years. For purposes of comparison with the results of operation in the treatment of portal hypertension the series reported by Ratnoff and Patek (1942) is not acceptable, because in 42 of the 106 patients who experienced hæmatemesis the bleeding was a terminal event. The cases analysed by Douglass and Snell (1950) are more suitable for two reasons: (1) most of the 67 cases they report had survived their first hæmatemesis long enough to be referred to the Mayo Clinic; and (2) the medical treatment was similar to that in the Edinburgh series. In table VI the results of medical treatment in all their cases of cirrhosis and in the cases complicated by hæmatemesis are compared statistically with the results in the present series after all forms of surgical treatment, and in particular after portal-systemic venous anastomosis or splenectomy alone. Survival-rates have been calculated from the time the patient presented in the control series, and from the time of operation in the cases treated surgically.

The following deductions are permissible from this analysis:

1. Survival-rates of all cases treated surgically are significantly better than after medical treatment (*a*) for the whole period under review and (*b*) at 1 year and 3 years after operation.

2. The survival-rate in cases with hæmorrhage as a presenting symptom is just significantly better after surgical treatment at 1 year, but is not significantly better than the control series at the other periods or over-all.

TABLE V—INTRAHEPATIC PORTAL OBSTRUCTION WITHOUT DETECTABLE BLEEDING: EFFECT OF SPLENECTOMY ALONE OR WITH OTHER OPERATIONS ON BLOOD PICTURE

—	Before operation	1 yr. after operation
Hb (%)	87·5 ± 8·1 (5)	98·2 ± 6·7 (5) P<0·02
Red cells (million per c.mm.)	4·45 ± 0·30 (7)	4·83 ± 0·50 (7) P<0·02
White cells (thousands per c.mm.) ..	3·98 ± 1·9 (5)	11·8 ± 5·0 (5) P<0·01
Platelets (thousands per c.mm.) ..	118 ± 95 (6)	406 ± 130 (5) P<0·01

Values expressed as means ± S.D. Number of cases in italic numerals in parentheses.
P values for difference between x years and before operation.

3. The survival-rate after portal-systemic venous anastomosis is not significantly better than that in the control series. In its present state the series treated by portal-systemic anastomosis is unfavourably weighted by two factors: (1) the use in 12 of the first 14 cases of the Blakemore-Lord tube, which has been found to be so commonly followed by constriction or obliteration of the anastomosis that it has been discarded; and (2) a high postoperative mortality during the first 3–4 years of the period under review, when patients who would not now be considered justifiable risks (for example, because of fluid retention and gross ascites) were submitted to operation. Over the whole period there have been 12 deaths in the immediate post-operation period—a mortality-rate of 18%—but in the 4 years ended December, 1953, 36 operations were performed with only 3 deaths (8%). These considerations give us some reason to expect that a report on a larger number of cases in a few years' time will show an improvement on the present figures.

Cause of Death

29 patients died during the period of observation. The principal causes of death (table VII) were hepatic failure, hæmorrhage, and the effect or complications of operation. Usually there was more than one cause, hæmorrhage or operation precipitating the onset of hepatic failure in a patient with a severely damaged liver. 2 patients suffered from tuberculosis after operation and both recovered—a man aged 47 years from pulmonary tuberculosis 1 year after operation, and a girl aged 13 years from miliary tuberculosis 4 years after operation.

TABLE VI—COMPARISONS OF RESULTS OF TREATMENT

Period (yr.)	No. of patients exposed	Survivors	No. of patients exposed	Survivors	P P*	P P†
	MAYO CLINIC: ALL CASES OF CIRRHOSIS		PRESENT SERIES: ALL CASES TREATED SURGICALLY			
1	374	215(57·5%)	64	50(78·1%)	<0·01	<0·01
3	374	158(42·2%)	53	31(58·5%)	<0·05	
5	194	63(32·5%)	30	12(40·0%)	<0·5	
7	56	11(19·6%)	11	2(18·2%)	<0·9	
	MAYO CLINIC: ALL CASES OF CIRRHOSIS WITH HÆMORRHAGE		PRESENT SERIES: ALL CASES WITH HÆMORRHAGE BEFORE OPERATION			
1	67	36(53·7%)	44	32(72·7%)	<0·05	<0·3
3	67	31(46·3%)	35	18(51·4%)	<0·7	
5	36	11(30·6%)	24	10(41·7%)	<0·5	
7	14	3(21·4%)	10	2(20·0%)	<1·0	
	MAYO CLINIC: ALL CASES OF CIRRHOSIS WITH HÆMORRHAGE		PRESENT SERIES: CASES WITH HÆMORRHAGE TREATED BY PORTAL-SYSTEMIC VENOUS ANASTOMOSIS			
1	67	36(53·7%)	22	13(59·1%)	<0·7	<0·7
3	67	31(46·3%)	20	11(55·0%)	<0·5	
5	36	11(30·6%)	14	6(42·9%)	<0·5	
7	14	3(21·4%)	7	2(28·6%)	<0·8	
	PRESENT SERIES: ALL CASES TREATED BY PORTAL-SYSTEMIC ANASTOMOSIS		PRESENT SERIES: ALL CASES TREATED BY SPLENECTOMY ALONE			
1	26	16(61·5%)	27	26(96·3%)	<0·01	<0·05
3	24	13(54·7%)	23	14(60·9%)	<0·5	
5	15	6(40·0%)	9	4(44·4%)	<0·9	
7	7	2(28·6%)	2	0	<0·9	
	PRESENT SERIES: CASES WITH HÆMORRHAGE BEFORE OPERATION					
	(a) PORTAL-SYSTEMIC ANASTOMOSIS		(b) SPLENECTOMY ALONE			
1	22	13(59·1%)	16	15(93·75%)	<0·02	<0·2
3	20	11(55·0%)	14	6(42·9%)	<0·5	
5	14	6(42·9%)	8	3(37·5%)	<0·8	
7	7	2(28·6%)	2	0	<0·9	

P* = Probability of difference in numbers surviving in each exposure period being due to chance alone: calculated from χ^2 distribution (Fisher 1950).

P† = Probability of difference in numbers surviving in whole series being due to chance alone.

TABLE VII—CAUSES OF DEATH (29 CASES)

Causes	No. of cases
Hepatic failure:	
Primary due to progress of disease	4
Following operation	8 } 25
Precipitated by hæmorrhage from varices	13
Complications of operation:	
Mesenteric thrombosis	2
Leakage at œsophagogastric anastomosis	1 } 4
Hæmorrhage at the site of operation	1

Intercurrent infection, except as a complication of operation, was not the cause of death in any instance.

Conclusions

The limitations of our analysis must be acknowledged. The number of cases is not large, and in the majority the period of observation has been relatively short. The heterogeneity of the group we believe to be balanced by the series which we have accepted as a control; and so far as we can ascertain, the only important variable in treatment has been the application of major definitive surgery in the cases we have reported. Finally, the statistical method is necessarily concerned with an impersonal analysis of the whole problem of portal hypertension as it has been presented. The individual patient seldom conforms to the mean of a series. Nevertheless, statistical analysis of the results of treatment in a changing pathological condition can provide guidance in particular cases, because it takes account of the failures as well as the successes, of the lapse of time since the treatment was undertaken, and of the natural history of the disease.

The following tentative conclusions have been drawn from our data:

1. Gastro-œsophageal bleeding is more likely after operation for portal hypertension associated with hepatic disease when it has been a presenting feature of the condition. Splenectomy alone is not the elective operation when there has been hæmatemesis or if œsophageal varices can be demonstrated, but is a satisfactory procedure when splenomegaly and hypersplenism are the presenting features. A portal-systemic anastomosis which remains patent does appear to provide some additional protection against recurrence of bleeding; but further evidence from a larger series and a longer period of observation is required, because the onset of bleeding may be long delayed after such an anastomosis has been occluded by thrombosis. Limited œsophagogastrectomy appears to be a satisfactory method of treating recurrent bleeding after other operations.

2. Hepatic function was maintained in patients who survived 5 or more years after operations which sometimes involved deviation of all portal blood from the liver by portacaval anastomosis. In most instances, these were patients whose hepatic function was not greatly impaired before operation. When there is ascites or other evidence of severe hepatic dysfunction operation should be postponed. If the indications for operation are urgent, the smallest procedure appropriate to the circumstances should be performed.

3. The leucopenia and thrombocytopenia which are characteristic of portal hypertension can be corrected immediately by splenectomy, and follow-up for 5 or more years shows that the improvement is maintained. Sometimes the power of resistance to infection has been noticeably increased after splenectomy. The anæmia usually responds rapidly to large doses of iron and to reduction in the frequency and severity of alimentary bleeding.

4. Statistical comparison of a series of patients treated medically with a series treated by operation in addition shows that the survival-rate is slightly, but for the most part not significantly, better in the patients submitted

to surgery. Individual case-records often appear to indicate unequivocal improvement after operation. It is worth recalling, however, that Ratnoff and Patek (1942) observed that patients with cirrhosis who survived their first hæmatemesis for 1 year had more than a 50% chance of surviving 5 years. It is against this background that the survival-rate after operation must be measured. Statistical proof of the merits of surgical treatment in portal hypertension and hæmatemesis cannot be provided for another 10 years. Longer follow-up will exclude the possibility of a fortuitous remission of symptoms coinciding with the post-operation period and will take account of the effect of the better selection and preparation for operation which have been shown by experience to be desirable.

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ACETAZOLAMIDE (DIAMOX) IN THE TREATMENT OF CONGESTIVE HEART-FAILURE

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PREVIOUS clinical trials of the diuretic effect of the carbonic-anhydrase inhibitor acetazolamide ('Diamox') in heart-failure have given highly conflicting results (Belsky 1953, Friedberg et al. 1953, Counihan et al. 1954, Relman et al. 1954, Ruskin 1955, Schwartz et al. 1955).

We report here the clinical and biochemical effects of acetazolamide in the treatment and prevention of cardiac œdema in 30 patients.

Material and Methods

Of the 30 patients studied 18 had congestive heart-failure. In 15 of these we compared the diuretic effects of acetazolamide and of mersalyl. In addition 12 patients who had recovered from an attack of congestive heart-failure were treated with acetazolamide alone for continuous periods of three to sixteen months to prevent recurrence of œdema.

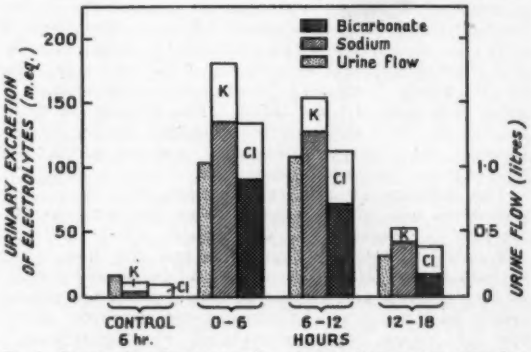

Fig. 1—Changes in urinary excretion of electrolytes and in urine flow produced by acetazolamide 0·2 g. two-hourly.

All the patients with heart-failure were treated in hospital. Their intake of water and salt was kept constant, and they were weighed at the same time each day after micturition. Urine was collected under oil during the whole period of observation and was analysed for sodium and potassium by flame photometry and for chloride by electrometric titration (Sanderson 1952). The urinary level of bicarbonate was calculated by the Henderson-Hasselbalch equation after manometric estimation of the carbon dioxide (Van Slyke and Neill 1924) and measurement of the pH with a glass electrode.

Results

Changes in Urine Flow and Electrolyte Excretion Produced by Acetazolamide

Fig. 1 illustrates the changes in acid-base composition of the urine of a patient with congestive heart-failure during the first eighteen hours' acetazolamide therapy. The most striking alteration was a large increase in the excretion of bicarbonate accompanied by a raised rate of urine flow and by increased excretion of the "fixed" cations sodium and potassium. In this patient the urinary output of chloride was moderately increased, but in the great majority of patients acetazolamide caused no material alteration in the excretion of this ion. Each successive dose of acetazolamide had progressively less effect, and the composition of the urine reverted to normal after twenty-four hours in spite of repeated doses.

In 10 cases we obtained control measurements of urine flow and excretion of electrolytes for one or more days before beginning acetazolamide therapy. The accompanying table gives details of the cumulative

CUMULATIVE CHANGES IN URINARY ELECTROLYTE EXCRETION CAUSED BY ACETAZOLAMIDE

Case no.	Type of heart-disease	Daily dose acetazolamide (g.)	Water (litres)		Sodium (m.eq.)		Potassium (m.eq.)		Chloride (m.eq.)		Bicarbonate (m.eq.)	
			1st day	3rd day	1st day	3rd day	1st day	3rd day	1st day	3rd day	1st day	3rd day
1	M.S.	0·5*	−1·23	..	−27	..	−23	..	−32	..	Not measured	
2	C.P.	0·7	+0·06	..	+16	..	+6	..	+14	..	Negligible	
3	A.S.	0·4*	+0·13	+0·26	+38	+40	+2	+21	+2	+3	Negligible	
4	H.H.D.	0·5*	+0·48	+1·80	+26	+95	−3	−6	+13	+44	Not measured	
5	H.H.D.T.I.	0·5*	+0·60	+1·12	+90	+177	+7	+21	+4	+7	Not measured	
6	Const. peric.	0·25*	+0·87	+2·22	+33	+76	+34	+45	−1	−3	+36	+56
7	C.P.	1·2	+1·0	+1·28	+160	+232	+66	+158	+7	+18	+128	+155
8	C.P.	1·2	+1·48	+2·30	+81	+64	+67	+165	−14	−67	+168	+177
9	C.P.	0·6	+2·25	+4·37	+322	+612	+65	+148	+107	+394	+202	+237
10	C.P.	0·25*	+2·40	+6·45	+377	+624	+69	+174	+172	+361	+228	+323

M.S. = Mitral stenosis. C.P. = Cor pulmonale. A.S. = Aortic stenosis. Const. peric. = Constrictive pericarditis.
H.H.D. = Hypertensive heart-disease. T.I. = Tricuspid incompetence. * = Single daily dose.

alterations of urinary excretion of electrolytes during the first three days' treatment. Of these 10 patients 3 gave no significant renal response to acetazolamide and showed neither a diuresis nor a loss of weight. In the remaining 7 patients the cumulative increments of urine flow were 1·1–6·4 litres. The increase in daily volume of urine appeared to be closely related to the increase in urinary excretion of sodium which was 64–624 m.eq. by the third day.

The increase in urinary excretion of sodium and potassium was in most cases about the same as the increase in excretion of bicarbonate, which averaged 119 m.eq. after twenty-four hours and 159 m.eq. after seventy-two hours. Only cases 9 and 10 showed a satisfactory diuresis and clinical response to acetazolamide, and in both these patients the increase in urinary excretion of sodium was accompanied by approximately equal increments in the urinary excretion of both bicarbonate and chloride.

Comparison of Effects of Mersalyl and Acetazolamide

Fig. 2 shows details of the daily volume of urine and urinary excretion of electrolytes in 15 patients with

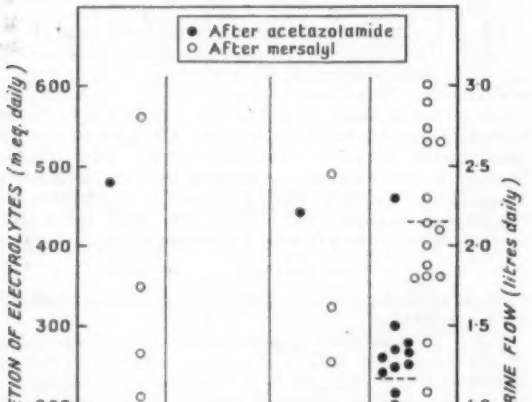

Fig. 2—Average daily urinary excretion of water and electrolytes by 15 patients treated with acetazolamide and mersalyl: horizontal lines represent mean values for all patients.

congestive heart-failure, each of whom had three to ten days' treatment with acetazolamide and with mersalyl alternately. Acetazolamide 0·25–1·00 g. was given either daily or on alternate days and mersalyl 2 ml. on alternate days in most cases, but in some on successive days, each injection being preceded by an oral dose of ammonium chloride 2–4 g. A representative example of the dosage schemes used is shown in fig. 3. The data in fig. 2 are the averages of all the days on which each drug was administered and thus represent the net effect of the diminishing response to acetazolamide, as already described.

In the group as a whole the diuresis effected by mersalyl was considerably greater than that caused by acetazolamide: the average daily volume of urine of the 15 patients was 1·2 litres during treatment with acetazolamide and 2·2 litres during treatment with mersalyl. The average daily urinary excretion of sodium

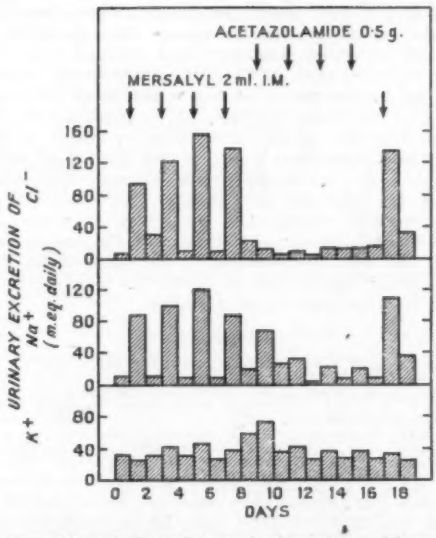

Fig. 3—Comparison of effects of acetazolamide and mersalyl on urinary excretion of electrolytes in a representative patient.

was 182 m.eq. under treatment with mersalyl but only 73 m.eq. under treatment with acetazolamide. The average daily urinary excretion of potassium caused by each diuretic was 44 m.eq. (fig. 2). The dependence of the diuretic effect of both drugs on increased urinary excretion of sodium is illustrated by the results in 2 patients with hypertensive heart-failure (fig. 4) whose daily intake of fluid was strictly limited to 1·5 litres each.

Judged by loss of weight and by the decrease of œdema and venous pressure, the therapeutic effect of acetazolamide was inferior to that of mersalyl in 12 of the 15 patients. 5 patients gave no response whatever to acetazolamide; 1 of these was also almost wholly resistant to mercurial diuretics. 2 patients who had a large diuresis and a good therapeutic effect from acetazolamide also had an exceptionally good result from mersalyl.

Fig. 3 illustrates a representative example of the changes in electrolyte excretion brought about by

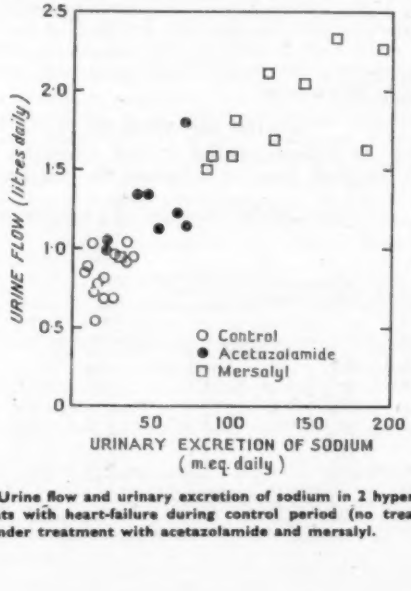

Fig. 4—Urine flow and urinary excretion of sodium in 2 hypertensive patients with heart-failure during control period (no treatment) and under treatment with acetazolamide and mersalyl.

acetazolamide and shows the diminishing renal response to it in comparison with the sustained and more potent effect of mersalyl.

Prolonged "Prophylactic" Treatment of Heart-failure with Acetazolamide

12 patients who had had at least one previous attack of congestive heart-failure but were not œdematous when treatment was begun were treated with acetazolamide for continuous periods ranging from a few weeks to sixteen months. All other diuretics except 'Monotheamine' were withheld, but the amount of salt in the diet was restricted.

Of 9 patients with cor pulmonale 3 had a recurrence of heart-failure in the sixth, twelfth, and sixteenth weeks of acetazolamide therapy, the respective dosages being 500 mg. on alternate days, 250 mg. daily, and 250–750 mg. daily. When heart-failure had developed, acetazolamide was withdrawn and treatment with mersalyl was begun at once and produced a large diuresis in each case. In the remaining 6 patients with pulmonary heart-disease heart-failure did not develop during an average period of treatment of eight months.

In 2 of the 3 remaining cases severe congestive heart-failure developed in the fourth week of acetazolamide therapy; 1 of these 2 patients subsequently had a spontaneous diuresis as a result of rest in bed only, and the other had an excellent diuretic effect from mersalyl and rapidly became free from œdema.

Toxic Effects of Acetazolamide

No major toxic effects were observed. Almost all the patients who received 0·5 g. or more of acetazolamide daily became slightly drowsy and languid, and some complained of malaise, headache, and paræsthesiæ of the fingers, toes, lips, and nose. One patient developed a light-sensitive dermatitis after five days' acetazolamide therapy (0·5 g. daily). No symptoms or signs of potassium deficiency developed even in the patients treated for almost a year.

Discussion

The results agree with the opinion of Relman et al. (1954) that acetazolamide is of little value in severe congestive heart-failure due to hypertensive, ischæmic, or valvular disease. The diminishing effect of successive doses of acetazolamide has been previously described by Nadell (1953) and Friedberg et al. (1952) and was invariable in our patients; it appears to be the chief factor limiting the diuretic action of acetazolamide. The diuresis caused by acetazolamide depends almost entirely on the increased urinary excretion of bicarbonate, and the findings of Counihan et al. (1954) suggest that the diminishing renal response to acetazolamide is caused by reduction of the plasma-bicarbonate level by loss of bicarbonate in the urine. Once, therefore, maximal effect has been obtained from acetazolamide—i.e., when 150–250 m.eq. of bicarbonate has been excreted in the urine—an appropriate time must be allowed for the plasma-bicarbonate level to regain its normal value before acetazolamide will again act as a diuretic. We have found that several days are required for recovery from the effects of even a single dose of acetazolamide, and in the full cycle of treatment and recovery only about 2 litres of œdema fluid may be lost in most cases. This is a poor therapeutic result compared with the loss of several litres of œdema fluid which may follow a single injection of a mercurial diuretic. Resistance to the action of mercurial diuretics may also develop after repeated administration, but this is relatively infrequent compared with the invariable development of resistance to acetazolamide.

In a minority of patients acetazolamide causes increased urinary excretion of chloride ion as well as of bicarbonate. We observed this effect in only 3 of the 18 patients whose urinary excretion was studied in detail. In these 3 patients, 2 of whom had cor pulmonale, the increase of urine flow and of the urinary excretion of sodium was considerably greater than in the remainder, and they were the only patients on whom acetazolamide had a good therapeutic effect, judged either on its own merits or in comparison with mersalyl. This finding is in agreement with the results of Schwartz et al. (1955), who deduced that the urinary excretion of chloride must have increased in their 8 patients with cor pulmonale who had a good diuresis as a result of acetazolamide therapy.

Of the 12 patients to whom we gave acetazolamide in the hope of preventing a recurrence of their previous congestive heart-failure 5 developed œdema and venous congestion while under treatment. In 6 cases with cor pulmonale heart-failure did not develop during treatment; but all of these patients concurrently restricted salt in their diet, and 4 had been free from congestive heart-failure for at least six months before treatment with acetazolamide was begun. It is therefore difficult to draw any positive conclusion about the prophylactic value of acetazolamide in these patients.

The longest interval between doses in this study was seventy-two hours, and this is too short for full recovery of the plasma-bicarbonate level. It is therefore possible that a longer interval between doses might have been more effective in preventing œdema. It is highly unlikely, however, that single doses of acetazolamide at intervals of four or five days would be equally as effective as a mercurial diuretic given at similar intervals.

Summary

We describe the effects of treatment of 18 patients with congestive heart-failure with the carbonic-anhydrase inhibitor acetazolamide ('Diamox').

In 3 patients acetazolamide produced a moderately good diuresis; in 10 the diuretic effect was small, and in 5 it was negligible.

The diuretic efficacy of acetazolamide was inferior to that of mersalyl in 12 of 15 patients in whom these two drugs were compared.

No serious toxic reactions were observed from acetazolamide.

In 5 of the 12 cases where acetazolamide was administered to prevent recurrence of heart-failure, œdema and venous congestion developed during treatment.

We are grateful to Prof. C. H. Stuart-Harris and Dr. C. E. Davies for advice and encouragement, and Mr. A. F. Nicholls and Miss S. Exley for technical assistance. The acetazolamide was supplied by Messrs. Lederle.

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"... Only now are engineers beginning to think about machines that are competent to answer 'perhaps' as well as 'yes' or 'no' or belch out strings of numbers. If I were asked—as indeed I often am—what will be the prosthetic brains of the future, I should not suggest anything like the instruments of the present day; rather I should envisage some sort of 'hunch generator' that would deal speculatively with events much as I think our brains do, but would begin life as metallic medusas and would acquire human wisdom without the shocks and disappointments that, in us, breed prejudice and despair. Whether, like the legendary Medusa, they would petrify their observers, will depend on the reflective cunning of our descendants."—W. GREY-WALTER, D.SC., in *Cybernetics*, New York: Josiah Macy, jun., Foundation. 1955; p. 31.

HÆMATEMESIS
CONTROLLED BY ADRENALINE AND STYPVEN

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"The effort to distinguish those patients who would recover without timely operation from those who would die without it has not been unsuccessful and still proceeds" (Aird 1949).

ANY discussion on the treatment of gastroduodenal hæmorrhage still tends to resolve itself into arguments for and against surgical intervention. Meulengracht (1935) was primarily responsible for the slow acceptance of surgical treatment, and he accomplished it with a single sentence: "I consider a mortality of 1 or 2 per cent on dietary medical management makes the question (of operation) unreal to me and relieves me of the responsibility of having to decide in an individual case whether operation is advisable or not" (Aird 1949). It is very tempting to follow such a guiding principle, which says in effect "do nothing apart from performing a few simple rites, never make a decision, and salve your conscience with the knowledge that you will have achieved the best possible results." With this stroke, Meulengracht left his rivals, Gordon-Taylor and Finsterer, crying like voices in the wilderness. What chance had a gospel of decision and selective action against an appeal such as this!

As so often happens, the truth lies somewhere between the diametrically opposed views, and it is now recognised that there is "an irreducible minimum of 10 per cent. of sufferers from serious hæmorrhage who are condemned to death by the refusal of operation or by delay in advising it" (Aird 1949).

The crux of the problem is how to identify at an early stage the patient with "surgical" hæmatemesis, who is "bleeding from an artery of anatomical size fixed in scar tissue at the base of a chronic ulcer" (Ogilvie 1955). This cannot always be done with certainty, but the selection of patients for operation has been simplified by a slight bending of the facts to provide a clear-cut criterion for surgery, based on a logical conception of the underlying pathology. Working on an 80% probability, the indications for operation are: repeated or continued bleeding during medical treatment, middle-age, a history of previous hæmorrhage, and pain preceding hæmorrhage. Of these indications, the first is naturally the most important, but, unfortunately, equally copious and repeated bleeding can result in the early stages from an acute lesion, and an acute lesion can be the real source of bleeding, though a chronic lesion is present as well.

It is a pity to ablate the greater portion of an otherwise healthy stomach because of an acute transient lesion, or to operate on a quiescent chronic lesion at a time when the patient is least suited to undergo operation. It is even more humiliating when the lesion comes to lie on the wrong side of the gastric resection and is demonstrated subsequently at necropsy. These unhappy possibilities are covered by a bald though inaccurate statement that the bleeding from an acute lesion is never severe enough to be alarming. If emergency surgery is undertaken in every case of serious and repeated bleeding, it means that a larger proportion of cases will be exposed to a risk by no means negligible in patients of this age and in this condition. Surgery would be better confined to those patients who can be saved only by operation.

This leaves the discussion evenly balanced; the physician may lose a patient who could have been saved by surgery, and the surgeon may lose one by early operation who would have recovered spontaneously.

TABLE I—NO. OF PATIENTS ADMITTED AND MORTALITY-RATE

Year	No. of patients admitted	No. of deaths and mortality-rate
1950	68	8 (*12·1%*)
1951	79	10 (*12·6%*)
1952	79	9 (*11·4%*)
1953	93	9 (*9·7%*)
1954	92	6 (*7·6%*)

Review of Past Experience

This review covers a period of five years (1950–54) during which time all cases of hæmatemesis were regarded as medical problems, and only those patients needing surgical treatment were referred to us by the physicians.

Table I shows the number of patients admitted to the Law Hospital with frank hæmatemesis and it also shows the total mortality-rate. Like Tanner (1950), I feel that the total mortality-rate is a true index of therapeutic success, which depends on the closest liaison between physician and surgeon.

Table II includes only those patients who had simple gastroduodenal lesions which failed to respond to medical treatment. The figures quoted are statistically insufficient, but they provide a basis for discussion.

TABLE II—PATIENTS TRANSFERRED TO SURGICAL WARD AND THE RESULTS OF OPERATION

Year	No. of patients transferred to surgical wards	No. of patients with chronic ulcers	No. of patients with acute lesions	No. of emergency operations	No. of delayed elective operations	No. of postoperative deaths	No. of non-operative deaths	Total no. of deaths
1950	3	2	1	3	0	1	0	1
1951	1	1	0	1	0	0	0	0
1952	8	7	1	8	0	4	0	4
1953	16	11	5	12	7	0	2	2
1954	11	7	4	2	5	0	0	0

These tables cover a period from routine medical treatment (1950 and 1951), through a period of this treatment combined with emergency gastrectomy (1952) to the present method, started in 1953 and finally established in 1954.

Table I shows that there was no significant change in the overall mortality-rate until 1954, and table II shows that nearly the same number of patients died in 1952 as in previous years, but that a higher proportion did so in my surgical wards.

By the beginning of 1953 I became convinced that emergency gastrectomy was not the solution in the late stages of hæmorrhage. A mortality-rate of 50% in these cases compared with under 2% for 276 elective gastrectomies was disquieting. No patient presented an insuperable technical difficulty and all had been prepared, and treated postoperatively, on recognised lines. In the late stages of hæmorrhage, adequate restoration of blood-volume with control of the bleeding by operation was not always successful, and it occurred to me that if I could devise some means of controlling the bleeding till a full physiological stabilisation could be attained, the results of operation would be more favourable. In other words, I could choose the time and conditions for attack.

Adrenaline and Stypven

The most feasible solution appeared to be a powerful styptic which could be given safely by mouth. I had seen Russell's viper venom ('Stypven') used some years previously by my colleague, Dr. J. Bryant, in perfect safety, but with equivocal results. It struck me that the reasons for its uncertain action were its inability to produce an occlusive clot in the presence of active bleeding and the unlikelihood of its entering the duo-

denum before becoming inert. If I could produce a temporary ischæmia of the gastric or duodenal lesion with a relaxation of the pyloric sphincter, the necessary conditions for the effective use of stypven might be obtained.

I recalled an incident that occurred several years previously. I had been called to deal with a case of severe and persistent hæmorrhage following gastro-enterostomy, in circumstances where neither blood nor anæsthetist were readily available. Gastric lavage produced no improvement and in desperation I injected 5 ml. of adrenaline hydrochloride (1 in 1000) down the Ryle's tube. The bleeding ceased, and to my intense relief there was no systemic reaction.

I felt that the important point was not that adrenaline had stopped the bleeding, but that it could be taken by mouth in a dosage that would have proved fatal given any other way. Stypven was similar to adrenaline in this respect; injected into the blood-stream it would be fatal, but it could be taken safely by mouth.

Dosage.—Initially a dose of 5 ml. of adrenaline and 1 ml. of stypven was given to patients who were not fit for operation. The dose was increased when I realised that both drugs could be given in complete safety, and that enough had to be given for the drugs to permeate the stomach contents and pass into the duodenum while still active. The optimum dose (which can be exceeded in perfect safety) was found to be 40 ml. of adrenaline and 5 ml. of stypven.

The use of adrenaline was at first purely theoretical, but once its safety was established beyond question, I persuaded Dr. Leitch to administer 10 ml. of adrenaline to 2 volunteers who had been referred for barium-meal examination. The patients were chosen because the capacity, motility, and emptying times of their stomachs were known. Dr. Leitch reported that there was no alteration in the volume or motility of the stomach after adrenaline, but there was a complete absence of mucosal rugæ, the pylorus was fully patent, and the barium flowed rapidly into the duodenum.

The shrinkage of the gastric mucosa allows the stypven obviously easier access to the lesion, particularly a small acute erosion.

Technique

This treatment calls for the closest liaison between physician and surgeon, and I have to thank Dr. A. C. Aitkenhead for her wholehearted coöperation, and Mr. A. Tomney, who has evolved the most efficient way of using adrenaline and stypven.

Every patient admitted to the medical ward is permitted a single attack of frank hæmatemesis. If, however, he bleeds a second time while at rest in bed, a no. 10 stomach-tube is passed, usually intranasally, and the stomach is washed out with 1 pint of sterile water. 20 ml. of adrenaline hydrochloride (1 in 1000) is inserted down the tube, and the tube left in situ. After twenty minutes to half an hour, gastric lavage is repeated; a further 20 ml. of adrenaline is then injected, followed a few minutes later by 5 ml. of stypven, which is cleared from the tube by 5 ml. of sterile water.

The stomach-tube is withdrawn and a slow intravenous transfusion of 2 to 4 pints of blood started. An enema is given the following morning to remove melæna, and the medical dietary régime is resumed. Dr. Aitkenhead prefers to retain the stomach-tube and aspirate at intervals to detect any fresh bleeding, but I feel that the patient is more comfortable without the tube. Any significant fresh bleeding is immediately shown by a return of pallor, sweating, a rise in pulse-rate, and a fall in blood-pressure.

The most successful time to use adrenaline and stypven is immediately after bleeding has taken place. The patient is still hypotensive and, if the occluding clot is washed away, bleeding is not severe and can be controlled temporarily by adrenaline.

No amount of washing can remove large intragastric blood-clots completely, and the initial dose of adrenaline occasionally acts as a mild emetic, causing the patient to vomit once and so clear his stomach. Should this not occur, the interval between the first and second gastric lavages permits the greater portion of the fluid contents to pass through a patent pylorus, and the second lavage then clears what is left. The second dose of adrenaline again shrinks the gastric mucosa and permeates freely between the stomach wall and the retained blood-clot. If bleeding has recurred, it is again arrested and the stypven, following the same route with little or no delay, is able to produce a stable occlusive clot over the bleeding-point.

As soon as the patient recovers sufficiently, a barium-meal examination is carried out. If a definite lesion is reported, he is treated by a delayed elective gastrectomy, and table II shows the low mortality-rate in 1953–54 following this form of treatment.

Treatment with adrenaline and stypven can be used in complete safety in any patient, irrespective of his age, general condition, and degree of exsanguination, and it gave such excellent results at first that I concluded that emergency gastrectomy was no longer necessary. But in 1953, 2 patients died from hæmorrhage after adrenaline and stypven, and necropsy showed that they had been bleeding from arteries of considerable size lying in the base of chronic ulcers.

Adrenaline and Stypven as "Preselectors"

It then occurred to me that these cases had been examples of "surgical" hæmatemesis, which I mentioned earlier in this paper, and that adrenaline and stypven had acted as "predictors" or "preselectors" of the patients who should have immediate operation.

If bleeding recurs within a period of seventy-two hours after the administration of adrenaline and stypven, it is proof that the patient has "surgical" hæmatemesis. It stands to reason that an occlusive blood-clot in a large vessel whose walls are fixed in fibrous tissue will not withstand indefinitely the hammer-blows of a rising blood-pressure, however tough the clot may be.

Should the repeated hæmorrhage be excessive and the patient collapse, adrenaline and stypven are used again, but only as a preparation for operation. The drugs control the bleeding for a further period, during which time resuscitation can be achieved by rapid blood-transfusion without risk of a sudden disastrous hæmorrhage as the blood-pressure returns to normal. Adrenaline and stypven may be unnecessary in less severe degrees of bleeding. The patient should then respond satisfactorily to emergency gastrectomy; the 4 patients who had emergency gastrectomies in 1953 and 1954 were typical cases of "surgical" hæmatemesis (table II).

The knowledge that recurrent bleeding must be due to a chronic ulcer is useful if the resected portion of the stomach shows no lesion; the lesion must be in the gastric remnant, and can be looked for and dealt with accordingly.

Bleeding occasionally recurs on the fifth day after the administration of adrenaline and stypven in cases of non-surgical hæmatemesis. It seems that the underlying pathological process outlasts the period of effective control by the stypven clot. The hæmorrhage, however, is rarely severe and recovery is spontaneous.

Discussion

The advantage of this treatment is that it can be employed at the earliest possible moment in any case of hæmatemesis where a gastroduodenal lesion is suspected. It forestalls the rapid deterioration in the patient's condition caused by repeated hæmorrhage, and incidentally saves a considerable amount of blood.

We found that all acute gastroduodenal lesions stopped bleeding immediately after the administration of adrenaline and stypven; adequate transfusion then ensured an uneventful recovery without further bleeding. A high proportion of chronic gastroduodenal lesions responded in the same way.

Since the adoption of the adrenaline and stypven technique, the effects of "over-transfusion" are no longer seen. The reason is that this condition only develops

in patients who have a slow, persistent oozing from the lesion between attacks of hæmatemesis. Nature attempts to combat blood-loss by inducing hypotension, which continues so long as there is bleeding. Any blood-transfusion during this phase produces only a reluctant response from a circulatory system set in hypotension to combat blood-loss; over-loading of the circulation is likely to occur before there is an appreciable rise in blood-pressure. The aged, with their less labile vascular tree, are the first to suffer. Once oozing has been checked, even the oldest patient responds to transfusion in the normal way.

Conclusion

This form of treatment has been in use for the past two and a half years, both in Dr. Aitkenhead's wards and my own. In no instance has the use of adrenaline and stypven given the slightest cause for anxiety even in the most desperately ill patient.

Nearly all the patients transferred to my care have resisted routine medical treatment, but there have been no operative deaths. This shows that the method is worthy of a more extended trial than I have been able to make, and it should give equally satisfactory results at the hands of all who wish to use it.

In conclusion, postoperative bleeding from a gastro-jejunal suture line is the one condition least often controlled by adrenaline. A bleeding-point in the anterior wall of the anastomosis is often recessed between infolded layers of normal mucosa which form an effective barrier to the adrenaline and stypven.

I have to thank Sir Heneage Ogilvie for his invaluable criticism and help in the preparation of this paper.

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PARATYPHOID-C OSTEOMYELITIS OF THE TIBIA

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OSTEOMYELITIS is a rare complication of salmonella infections. Even in typhoid fever, which gives rise to metastatic bone involvement more commonly than any other salmonella infection, the incidence of osteomyelitis has been reckoned to be as low as 0·82% (Winslow 1923). Paratyphoid B is the next in order in frequency, but bone involvement was found to arise in only 2 instances of 1038 cases reviewed by Webb-Johnson (1917). Even more rare, judging from the number of reported cases, is osteomyelitis complicating infection with any of the other salmonellæ. We have found only 28 reported cases of osteomyelitis due to salmonella other than *Salmonella typhi* or *Salm. paratyphi B*; the organisms were *Salm. choleræ-suis* (17), *Salm. enteritidis* (5), *Salm. typhimurium* (4), *Salm. panama* (1), and *Salm. oranienburg* (1). We have found no previous report of a case of paratyphoid-C osteomyelitis.

Case-report

The patient was a Jamaican, aged 40, who had lived in this country for a year and was employed as a metal pickler. He had had yaws in childhood. He had never, as far as he could remember, had any abdominal pain, and careful questioning revealed no past disturbance of bowel habit. He was first seen in the casualty department on Oct. 25, 1955, when he complained of pain in his left ankle and lower leg which had caused him difficulty in walking and had kept him awake at night for the past six weeks. There was no history of a blow or injury to the leg.

Examination revealed a diffuse swelling over the lower anterior portion of the left tibia with superficial redness of the skin and severe tenderness to firm pressure over the bone. Radiography showed thickening and widening of the distal quarter of the tibia with some central osteolytic areas; well-marked periosteal elevation was present, particularly in the lower portions. He was admitted to hospital for investigation, under the care of Mr. J. C. Fulford. His pulse-rate and temperature were normal, but, despite bed rest and immobilisation of the leg in plaster, the pain grew steadily worse. On Nov. 1 radiographic examination of the left tibia showed that the periosteal reaction had increased in extent and thickness. Blood-count: red cells 4,500,000 per c.mm., hæmoglobin 90% (13·4 g. per 100 ml.), white cells 4700 per c.mm. (polymorphs 70%, eosinophils 4·5%, basophils 0·5%, lymphocytes 18%, monocytes 7%). Erythrocyte-sedimentation rate (Westergren) 42 mm. in the first hour; Wassermann reaction negative; serum alkaline phosphatase 8 King-Armstrong units.

Operation.—On Nov. 4 the skin was incised and the periosteum was found to be much thickened. This was incised and stripped from the bone, to which it was clearly adherent. Drilling into the bone resulted in a gush of clear fluid, followed by about 5 ml. of yellow pus. The marrow cavity was explored; a gauze pack impregnated with yellow soft paraffin was inserted and the skin lightly sutured over the wound.

Bacteriological examination.—Gram-staining of the pus showed no organisms. Overnight culture on blood-agar yielded a pure growth of gram-negative bacilli. Subculture on desoxycholate and McConkey's media produced a profuse growth of non-lactose-fermenting colonies. The organism, which was motile, gave the biochemical reactions of a salmonella. H and O suspensions of the patient's organism were agglutinated by standard *Salm. paratyphi C* sera to a 1 : 250 dilution. The patient's serum agglutinated standard suspensions of *Salm. paratyphi C* O to a titre of 1 : 125 and of *Salm. paratyphi C* H to a titre of 1 : 50. Dr. Joan Taylor, of the Salmonella Reference Laboratory, reported: "The organism has the following antigenic structure: O = 6,7; H = C-1,5. The biochemical reactions confirm the organism to be *Salmonella paratyphi C*." Examination of the urine and fæces on three occasions revealed no pathogenic organisms. Blood-culture on Nov. 7 was sterile after incubation for three weeks.

Treatment.—The organism was found to be fully sensitive to chloramphenicol, and accordingly the patient was given 500 mg. six-hourly. As a precautionary measure he was transferred to Little Bromwich Infectious Diseases Hospital on Nov. 9 after removal of the pack from the wound. He recovered completely, and the wound is well healed.

Discussion

Compared with common pyogenic osteomyelitis, (staphylococcal and streptococcal), that due to salmonella infection is usually less destructive and the bony lesions heal more quickly. Paratyphoid bacilli are known to linger in the bone-marrow long after they have disappeared from the urine and fæces (Macdonald 1941). Reported cases suggest that as a rule the longer the interval between the acute intestinal infection and the onset of osteomyelitis, the milder is the clinical course of the osteomyelitis itself (Giaccai and Idriss 1952). It is commonly reported that activation of the clinically latent micro-organisms can be produced by trauma or physical strain (Lever and Barber 1945), but no such history was obtained in this case. Since the osteomyelitis is a late, and sometimes very late, complication of salmonella infection, its nature is unsuspected in most cases, as it was in the present one. Only serological studies and, above all, bacteriological examination of pus from the lesion will establish the diagnosis.

In the West Indies by far the commonest type of salmonella infection is paratyphoid C. In 1952, 584 cases of paratyphoid were notified in Jamaica alone (World Health Organisation 1953). Many immigrants (35,000) have come to Great Britain from the West Indies, and the possibility of paratyphoid-C infection should enter into the differential diagnosis of illness in such

people. Owing to the relatively large number of women from that area who are employed in the catering trade, one should be alert for the carrier of *Salm. paratyphi C.*

Summary

A case of paratyphoid-C osteomyelitis of the tibia is described. Surgical drainage and chloramphenicol therapy brought about complete recovery.

Attention is drawn to the occurrence of paratyphoid-C infection in West Indians.

We wish to thank Mr. Fulford for permission to publish this case; and Dr. Taylor for her help in identifying the organism; and Miss M. N. Ellis for secretarial assistance.

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GIANT HYPERTROPHIC GASTRITIS
WITH HÆMORRHAGE REQUIRING EMERGENCY GASTRECTOMY

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GIANT hypertrophic gastritis, a rare chronic inflammatory disease of unknown origin, is of clinical interest because it is usually diagnosed as carcinoma. Its pathological features, however, are distinctive and were first described by Ménétrier (1888), who termed the lesion *polyadénome en nappe*. Giant hypertrophic gastritis is to be distinguished from so-called chronic hypertrophic gastritis, which is often a variant of normal (Palmer 1954), and also from the polypoid lesion sometimes found in the pylorus near a peptic ulcer or the stoma of a gastro-enterostomy (Spriggs 1943).

Ménétrier (1888) found that the stomach in one of his cases was

"bulky and markedly dilated. When cut, the mucosa was greatly swollen and thickened, and thrown into enormous protruding folds, the appearance resembling that of cerebral convolutions. These folds were as thick as a finger, sinuous and separated by deep crypts, lying on the whole parallel to the long axis of the stomach. They were particularly thick on its posterior wall, where the craters were 2–3 cms. deep. The hypertrophy affected the greater part of the stomach, sparing the cardia to a distance of 3 cms., and terminating abruptly in a sharp edge 8 cms. from the pyloric sphincter. The mucosal surface was composed of innumerable mammillations, 3–4 mms. wide and 4–5 mms. high, which were surrounded by small craters. It was reddish-violet in colour, there were many scattered ecchymoses, and the whole affected surface was covered by a thick layer of viscous mucus, which was difficult to detach. In section, although the hypertrophy was mainly due to thickening of the mucosa, the submucous and muscular layers and the peritoneum were also seen to be involved."

On palpation the exposed stomach has a peculiarly boggy texture, which has been likened to that of a varicocele (Bourne and Wood 1948), a bunch of fish-worms (Maimon et al. 1947), or, more aptly, a placenta (Strauss et al. 1928), and the neighbouring lymph-glands are sometimes enlarged.

The symptoms of giant gastritis are unremarkable. Mild or severe dyspepsia may have been present for a few weeks or many years, while anorexia and weight loss may help to suggest the presence of carcinoma. In one patient (Grime and Whitehead 1951), a firm well-defined mass, which moved on respiration, emerged from beneath the left costal margin, but in all other cases nothing has been felt in the abdomen. Swelling of the ankles, an unusual finding in this disorder, has been attributed to a fall in the plasma-protein level. Anæmia is common, but acute bleeding has been described in only six patients (Brunn and Pearl 1926, Strauss et al. 1928, Buckstein 1940, Spriggs 1943, Maimon et al. 1947, Kilbourne 1953). None of these required urgent operation, but in the patient described here gastrectomy was performed for uncontrollable hæmorrhage.

Case-record

A labourer, aged 39, who was admitted on Jan. 12, 1955, for four years had complained of epigastric discomfort and fullness after meals, loss of appetite, flatulence, and constipation; and these symptoms were unrelieved by diet, alkaline powders, or aperients. He had lost about seven pounds in weight. Four weeks before admission he became tired and pale, and on one occasion he fainted at stool. Twenty years and thirteen years previously he had had epigastric pain, which persisted for six months on each occasion, and while on war service in Egypt he had been ill with dysentery for three weeks. His consumption of alcohol was moderate (two pints of beer on occasional weekends), and he smoked 10–15 cigarettes a day. There was nothing relevant in his family history.

On examination he was well nourished, anxious, and pale, and there was no œdema. His pulse-rate was 90 per minute and blood-pressure 130/70 mm. Hg. No abnormal tenderness or mass was found in the abdomen. His hæmoglobin was 38% and plasma-proteins 6·7 g. per 100 ml. (albumin 4·3 g. and globulin 2·4 g.).

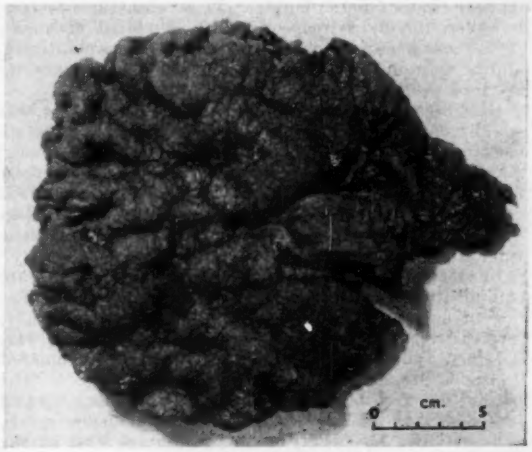
Treatment and Progress.—The patient's condition improved with medical treatment and blood-transfusion (3½ pints), and was discharged on Feb. 10, four consecutive stools (Feb. 8–10) containing no occult blood. A barium-meal examination on Feb. 10 was negative.

He returned on March 18, having vomited about 2 pints of blood that morning. He was again pale and was moderately shocked; his pulse-rate was 110 per minute and blood-pressure 90/50 mm. Hg. Blood was transfused, 2 pints in twenty-four hours, but on March 22 his condition had not improved and a further 3 pints was given. Three days later pallor was as great as on admission, and recovery with medical treatment now seemed unlikely. More blood was given, and at 6.30 P.M. on March 25 he underwent laparotomy by Mr. J. E. Richardson.

Laparotomy and Subsequent Progress.—The stomach was enlarged, and its proximal two-thirds diffusely thickened, especially along the greater curve. There were no palpable lymph-glands. Total gastrectomy and œsophagojejunostomy (Roux-en Y type) were performed. The patient's recovery was delayed owing to antibiotic-induced staphylococcal enteritis, but he was eventually discharged in good condition. Four months later he was symptom-free and had almost regained his normal weight.

Pathological Examination

The removed stomach showed, as was later realised, all the features of giant hypertrophic gastritis. On palpation it was heavy and boggy, like a placenta; its mucosal surface



Mucosal surface of stomach.

was obscured by mucus and consisted of greatly exaggerated folds, resembling cerebral convolutions (see figure). These changes were most distinct along the greater curve, where the stomach was up to 4 cm. thick, and in this region the muscular coats were also hypertrophied. A sharp line of demarcation separated the body of the stomach from the apparently unaffected antrum, and there was no ulceration or scarring of the duodenum.

Microscopy.—Giant hypertrophic gastritis. Infiltration of all coats of stomach, but mainly of mucosa and submucosa, by plasma-cells, lymphocytes, and occasional eosinophils, polymorphs, and macrophages. In the more severely affected areas there were occasional micro-abscesses; and in these areas, too, fibrosis extended from the submucosa into the muscularis and serosa. A small acute ulcer was present in the depths of a fold (a similar ulcer might well have led to hæmorrhage). The inflammation was not confined to the hypertrophied portion of the stomach but extended with diminished intensity towards the pylorus. Here and in the adjacent duodenum there were many lymph follicles in the mucosa, some with prominent germinal centres. The mucosa was grossly hypertrophic, but it was very well differentiated and there was no suggestion of carcinoma. The larger folds seen macroscopically had a connective-tissue core derived from the submucosa, while the small secondary folds consisted of mucosa only. Mucus-secreting cells not only covered the surface and lined the gastric pits, but also extended to the deepest parts of the gastric glands. Zymogenic and parietal cells were present in reduced numbers. A few glands penetrated the submucosa for a short distance; and some of these, as well as some glands in the deep layers of the mucosa, showed cystic dilatation. Pronounced inflammatory changes (reactive hyperplasia, sinus catarrh, and plasma-cell infiltration) affected the greater and lesser curve lymph-nodes.

Discussion

In this case the diagnosis was not suspected before or at operation, and it was only after histological examination of the stomach that carcinoma was finally excluded. Brunn and Pearl (1926) observed that the diagnosis was usually in doubt until the stomach had been exposed at laparotomy, and, from a study of more recent case-reports, this still applies despite improved techniques in radiology and gastroscopy.

Maimon et al. (1947), describing radiographic appearances, found that the stomach was diffusely involved in each of their six cases, but the greater curve was principally involved. The mucosal folds were greatly thickened, indurated, and enlarged, producing an exaggerated saw-tooth appearance, often with broad, deep, sharp notches, especially along the greater curve. Softness of the rugæ was an almost constant finding; and, as had previously been noted by Spriggs (1943), the flexibility and maintained power of dilatation and contraction of the involved area, and the ability of the peristaltic waves to traverse it, were characteristic findings. These observations were, however, largely retrospective. In three of Maimon's (1947) cases carcinoma was diagnosed preoperatively, and in only one were the barium-meal findings correctly ascribed to diffuse gastric polyposis.

Gastroscopic examination, in Maimon's experience, was equally unrewarding; and they concluded that, although their cases were strikingly similar, the differentiation of giant gastritis from malignant neoplasm was extremely difficult and at times impossible. Thus in one of Schindler's (1939) patients carcinoma was wrongly diagnosed by gastroscopy, and in another an extragastric tumour could not be excluded.

In treatment, severe and persistent blood-loss, a rare complication exemplified in the present case, justifies radical surgery; but when there is no such urgency, medical treatment should first be tried. Spriggs (1943) obtained relief of symptoms with objective signs of improvement by means of gastric "self-lavage." The patient drinks a pint of warm water containing a small teaspoonful of sodium bicarbonate an hour before meals, and lies down for twenty to thirty minutes, first on the left side and then on the right.

When operation is preferred, or "self-lavage" has been unsuccessful, an extensive resection through healthy tissue, as for carcinoma, is unnecessary, because incomplete removal of the affected mucosa may be followed by spontaneous regression in the portion left behind (Grime and Whitehead 1951). In order to avoid total gastrectomy and its unpleasant sequelæ, however, it is essential to recognise giant hypertrophic gastritis before the stomach is excised.

Summary

A man, aged 39, with giant hypertrophic gastritis presented with bleeding which failed to respond to conservative measures, and he was subjected to total gastrectomy.

In this disorder severe hæmorrhage is exceptional, and the lesion is usually mistaken for carcinoma.

In treatment partial gastrectomy is preferable, but relief is sometimes obtained from gastric "self-lavage."

I am grateful to Dr. Donald Hunter and Mr. J. E. Richardson for permission to publish this case and for their helpful advice and criticism; and to Dr. R. G. F. Parker for his report on the microscopical findings.

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FEMORAL PERIARTERIAL SYMPATHECTOMY FOR DELAYED HEALING AFTER AMPUTATION

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FEMORAL periarterial sympathectomy, first described by Jaboulay in 1889 (Miles and Wilkie 1936), was brought into prominence by Leriche (Leriche and Heitz 1917, Leriche and Robineau 1927) whose original case-reports suggested that it would be of value in vasomotor and trophic disturbances of the extremities. Since its introduction it has been used for various conditions, including Raynaud's disease, diabetic and arteriosclerotic gangrene, chronic ulceration of the leg, frostbite, and causalgia.

The results of the operation have varied; its effects are local and transitory and it has therefore fallen into disfavour.

Black (1924) reported 10 cases of leprosy in which periarterial sympathectomy brought about healing of chronic ulcers and stumps after spontaneous amputation, but Bernheim (1925) reported only 4 successes in 9 cases of Raynaud's disease or thromboangiitis obliterans.

Gask and Ross (1934) considered that it had a definite though limited value, and Kuntz (1946) suggested that some peripheral vasodilatation always followed the operation but that the results did not justify its continued use.

Aird (1949) maintained that its only advantage was in reducing spasm after embolectomy. Slessor (1953), discussing

sympathectomy and palliative operations for occlusive arterial disease, does not mention the operation. Most workers, however, do not deny that temporary local vasodilatation follows the operation.

We report 2 cases in which femoral periarterial sympathectomy was undertaken to encourage healing in amputation stumps following arteriosclerotic gangrene.

Case-reports

Case 1.—A man, aged 76, attended the casualty department on Aug. 8, 1950, with a week's history of inflamed toes. There were sloughing ulcers on the adjoining sides of the right 4th and 5th toes and redness and swelling of the dorsum of the foot. The foot was cold, and no pulsation was felt in the dorsalis pedis, posterior tibial, or popliteal vessels. The patient was anxious not to be admitted and he was treated as an outpatient; but on Aug. 21, there was wet gangrene of the adjoining sides of the affected toes and he was admitted to hospital. His skin was otherwise healthy. Blood-pressure 210/100 mm. Hg.

Investigations.—His hæmoglobin level was 12·6 g. per 100 ml. and white blood-cell count 7800 per c.mm. (polymorphs 75%). Blood-urea 35 mg. per 100 ml. Urine normal.

Medical Treatment and Local Amputation.—Tolazoline hydrochloride ('Priscol') 75 mg. daily was given by mouth, and penicillin was given systemically. The inflammation subsided and the gangrenous area dried. The patient refused amputation of the leg, and local amputation was performed on Sept. 1, when it was noted that bleeding was poor. He was discharged from the ward on the 12th day after operation with no sign of healing, but no gangrene.

He was readmitted three months later, on Dec 4, with spreading gangrene of the forefoot. His hæmoglobin level was then 10·1 g. per 100 ml., and this urine contained protein.

Amputation was agreed to, and was performed at mid-thigh level on Dec. 13, with penicillin and chloramphenicol cover. The wound showed no sign of healing nor of inflammatory reaction, and on Dec. 29 (the 16th postoperative day) a small area of dry gangrene appeared and this spread during the next week.

Periarterial sympathectomy was performed and the wound edges were excised and resutured on Jan. 16, 1951 (the 34th day after amputation).

Progress.—Some erythema appeared at one end of the wound on about the 6th postoperative day, but the wound had healed uneventfully by the 22nd day. The stump remained soundly healed during a 4-month follow-up and was still healed when he was admitted to another hospital 10 months later with gangrene of the other foot.

Case 2.—A man, aged 70, attended the casualty department on Feb. 20, 1955, having fallen a few days previously.

On examination there was infective gangrene of the 4th and 5th toes of the right foot, extending along the outer side of the foot to the lower leg, which was almost completely encircled by a large ulcer. Pulsation was felt in both femoral and popliteal arteries. His general condition was exceedingly poor; he was dehydrated and undernourished.

Investigations.—Radiography showed patchy calcification of the dorsalis pedis artery at the level of the tarsus. His hæmoglobin level was 14·1 g. per 100 ml. and white blood-cell count 23,350 per c.mm. (polymorphs 87·5%).

Medical Treatment and Amputation.—The patient was admitted to hospital and given systemic penicillin and chloramphenicol and intravenous saline, plasma, and blood. On Feb. 23, a mid-thigh amputation was performed. Postoperatively his general condition improved slowly. His urine contained pus cells, red blood-cells, and occasional hyaline and granular casts, but no sugar. The stump showed no sign of healing; it was dry initially but it became moist and œdematous by the 8th postoperative day; on the 15th day, a small hæmatoma developed which increased in size and was evacuated on the 20th day. By the 30th day there was still no sign of healing. His hæmoglobin level fell from 15·0 g. per 100 ml. on Feb. 23 to 12·6 g. per 100 ml.

Periarterial Sympathectomy.—The patient was transfused with 800 ml. of blood and periarterial sympathectomy was performed on March 29 (34 days after amputation). At operation, $^3/_4$ in. of the common femoral artery was stripped of its adventitia. The wound edges were excised and resutured.

Progress.—A small area of necrosis developed at the side of the stump wound with some inflammation which was maximal on about the 10th day but which improved thereafter; healing was complete by the 22nd day. Skin-temperature recordings preoperatively and on the 17th day after operation showed no significant change. After his discharge from hospital an area over the stump $^1/_2$ in. long broke down, but it healed slowly over a period of 5 weeks.

Discussion

The problem presented by these 2 patients is not uncommon. Lehman and Figueira (1953), in a review of 75 cases of arteriosclerotic gangrene treated by amputation, found delayed healing in 25 and necrosis in 15. Necrosis might be treated by reamputation at a higher level, but one is loth to take that step when mid-thigh amputation has already been done and healing may still not occur.

An alternative is to improve the local circulation sufficiently to ensure that the wound heals after simple excision and suture. In the 1st case oral tolazoline was given early without appreciable effect, thus confirming Lynn's (1950) observation in cases of occlusive vascular disease of an increased blood-flow after intravenous tolazoline, but no significant improvement after oral therapy. Lumbar sympathectomy has a more widespread and lasting effect, but this is no minor operation for the frail, elderly patient. Periarterial sympathectomy was tolerated well by both patients, and although healing was not entirely uneventful the results were very different from those of the initial amputations and it was not necessary to shorten the stump. In each case it was considered that simple excision and suture would certainly have failed.

The rationale of this operation has been the subject of considerable discussion.

The femoral artery receives its main sympathetic-nerve supply from the posterior division of the femoral nerve in a bundle which reaches the artery at the point where the profunda branch is given off. It derives a few filaments from the iliac plexus and, in the adductor canal, from the saphenous nerve and the nerve to vastus medialis (Mitchell 1953).

It is reasonable to suppose that perifemoral neurectomy will lead to dilatation of proximal vessels without necessarily affecting more peripheral vessels. The clinical effect is known to be transitory; Lambert Rogers (1931), studying the effect of this operation on chronic leg ulcers, found that healing proceeded for 5 weeks, and if the skin was healed by that time it was likely to remain so, but an ulcer still present tended to increase in size. Apparently therefore perifemoral sympathectomy will be most useful when an increased blood-supply is required in the more proximal part of the limb and when healing is likely to occur within 5 weeks of the operation. The 2 present cases satisfy both these criteria, and it can be hoped that, although the vasodilatation has subsided, the blood-supply will remain sufficient for the demands of a stump that is never likely to be submitted to the pressure of a prosthesis.

After sympathectomy there is no clear correlation between evidence of increased blood-supply and the clinical result. Indeed, in some patients with vascular insufficiency incised tissues may bleed freely yet not heal. It appears that the insufficiency is caused not only by narrowing of the blood-vessels but also by loss of their normal intermittent action and capacity to react. Experience of sympathectomy for vascular disorders has emphasised the effects of interfering with efferent nervous pathways, but the insufficiency may be caused partly by absence of normal afferent stimuli; thus sympathectomy may act not only by reducing vascular tone but also by interfering with the afferent side of the reflex arcs which control vascular function, thereby provoking a new pattern of stimulation which can alter

the local functioning of the vascular tree. Gerard (1951) showed that an important feature of the pathogenesis of causalgia is an over-all decrease of sensory stimuli and a resultant neural imbalance. Something of this nature may take place in vascular lesions, and local sympathectomy may act in a way similar to many sympathetic blocks by changing the balance of neural activity at various levels rather than by a more mechanical or local effect.

Summary

In 2 cases of arteriosclerotic gangrene where healing had not followed mid-thigh amputation, perifemoral sympathectomy was performed at a further operation, which led to healing.

These cases are a reminder of the occasional usefulness of periarterial sympathectomy, an operation which is usually regarded as out of date.

We are indebted to Dr. S. Sevitt and his laboratory staff for the pathological reports. One of us (M. R. F.) was in receipt of a full-time grant from the Medical Research Council.

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Preliminary Communication

THE FATE OF ^{32}P-LABELLED BACTERIAL LIPOPOLYSACCHARIDE IN LABORATORY ANIMALS

RAPID changes in the resistance of laboratory animals to experimental infections can be produced by the injection of the lipopolysaccharide fraction of endotoxins extracted from gram-negative bacteria.[1–3] It has been suggested that these lipopolysaccharides contain the substrate for the bactericidal property of the serum.[1 3]

To study the nature of this reaction further we labelled lipopolysaccharide with radioactive phosphorus (^{32}P) as an integral part of the macromolecule and found that fresh serum from various animals can liberate phosphate from this material. While attempting to define more precisely the rôle of these materials in modifying the level of non-specific immunity, we also studied the fate in mice and guineapigs of the ^{32}P after intravenous injection of this lipopolysaccharide.

MATERIALS AND METHODS

Preparation of Radioactive Lipopolysaccharide

Escherichia coli 2380 was grown on the minimal medium of Davis and Mingioli [4] containing 1% Difco casamino acids and in which the phosphate had been replaced by 10 mC of ^{32}P per litre in the form of carrier-free sodium phosphate. The 1% casamino acid contained sufficient extraneous inorganic phosphate to satisfy the growth requirements of the organism. Radioactive lipopolysaccharide was extracted from the bacteria by the phenol/water method of Westphal et al.[5] The final material was entirely nondialysable and had a counting-rate of 2000–2500 per μg. a minute.

For the in-vitro experiments a small 'Perspex' dialysing cell was used. The mixture of 10 μg. of radioactive lipopolysaccharide and serum dilution (1·2 ml.) was separated from a physiological-saline solution (2·4 ml.) by a 'Cellophane' dialysing membrane, and an outlet tube from each chamber permitted 0·1 ml. samples to be withdrawn at intervals for assay of ^{32}P.

In the in-vivo experiments all the animals were injected intravenously, mice (weighing 20–22 g.) into a tail vein and guineapigs (weighing about 350 g.) into a saphenous vein. Blood samples were removed directly from the heart, and various organs were homogenised. Serum samples were placed directly on nickel planchettes, and blood or organ homogenates were absorbed by filter-paper discs stuck on the planchettes by shellac and dried by heating from above. All the specimens were counted under a thin mica end-window Geiger counter for such a time that the probable error of counting did not exceed 5%.

RESULTS

In vitro

Incubation at 37°C of radioactive lipopolysaccharide with sera from several common laboratory animals and with human sera rapidly liberated dialysable phosphate. This activity appeared to be greatest in rats and mice and least in rabbits.

Heating of the sera at 56°C for 30 minutes abolished this activity; hæmolytic complement did not appear to be necessary, since mouse serum, which contains none, was highly active. The removal of divalent cations by ethylene diamine tetra-acetic acid (E.D.T.A.) greatly reduced this activity. The optimal pH was about 8. Although this phenomenon has the characteristics of a phosphatase reaction, there was no obvious correlation with the content of alkaline phosphatase in the sera measured by the King-Armstrong method.

In vivo

When 5–60 μg. of lipopolysaccharide labelled with ^{32}P was injected intravenously into mice or 100 μg. into guineapigs, a large proportion was rapidly removed from the blood: about 40% disappeared within the first minute, and 60–75% was eliminated from the circulation in 8 minutes. Thereafter the remaining 25–40% persisted in the blood during the next hour without very appreciable diminution. The distribution of radioactivity in the body showed, as might be expected, that this material is taken up by the reticulo-endothelial system. This was confirmed by autoradiography. At least half of the removed radioactive lipopolysaccharide appeared in the liver and spleen, and smaller amounts were detected in the lungs, adrenal glands, and kidneys. The absence of radioactivity from brain tissue showed that this large molecule cannot cross the blood-brain barrier. The highest level of radioactivity attained by the reticulo-endothelial system developed within 15 minutes of injection.

The third of the originally injected radioactive lipopolysaccharide which is not removed by this macrophage activity did not appear in the circulating leucocytes but remained in the plasma in a non-dialysable form and was only gradually eliminated. Thus 17–22% still persisted after 6 hours, 10% after 24 hours, and 2% after 48 hours. A constant level of radioactivity was maintained in the liver throughout this period of gradual elimination from the plasma. During the same time, however, radioactive dialysable phosphate was detected in the urine, appearing as early as 15 minutes after injection, and continued until the radioactive lipopolysaccharide had virtually disappeared from the blood.

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The radioactive lipopolysaccharide removed by the reticulo-endothelial cells appeared to be firmly held by them. Thus only by the second day did the radioactivity of the liver begin to decrease, and a third of the original amount was still present at the end of a week. One of the interesting features of the mechanism of early rapid clearance is that a constant proportion of widely varying sublethal doses of radioactive lipopolysaccharide was removed after intravenous injection. That this finding does not necessarily indicate the presence of two differing substances in our material is shown by the fact that radioactive lipopolysaccharide, re-extracted from the blood of guineapigs 30 minutes after injection, is treated in the same proportionate manner as the original preparation when injected into further animals.

The intravenous administration of large doses of lipopolysaccharide depresses the ability of the reticulo-endothelial system to remove a second injection of radioactive lipopolysaccharide 30 minutes later. In some experiments the activity of the reticulo-endothelial system appeared to have fallen as low as 25% of the normal. This effect did not appear to depend solely on the bulk of material injected, because it required 1 mg. of crude bacterial cell walls to produce the same degree of depression as 0·1 mg. of purified lipopolysaccharide. Furthermore, even 20 mg. of trypan-blue could not depress the reticulo-endothelial system so much in half an hour.

Finally, the initial clearance of radioactive lipopolysaccharide from the blood-stream by the reticulo-endothelial system is even greater in animals which had received 1–50 μg. of lipopolysaccharide 48 hours previously. If, however, very large doses of lipopolysaccharide were given and the animal survived, the activity of the reticulo-endothelial system tended to remain subnormal after 2 days.

DISCUSSION

A possibility which must be excluded is that the ^{32}P liberated from radioactive lipopolysaccharide in both the in-vitro and the in-vivo experiments was present as an impurity in the material. Two findings are against this interpretation: different batches of radioactive lipopolysaccharide have behaved similarly; and radioactive lipopolysaccharide re-extracted from the blood of a guineapig behaved identically with the initial material.

The fate of lipopolysaccharide appears to involve two mechanisms in the animal body:

(1) The reticulo-endothelial system has been associated with resistance to the effects of endotoxins, for susceptibility is greatly increased after "blockading" with such substances as 'Thorotrast,' trypan-blue, and colloidal iron.[6,7] Further Biozzi et al.[8] have shown that the ability of this system to phagocytose carbon particles can be either depressed or stimulated by the endotoxin of *Salmonella typhi*. Our direct observations with radioactive lipopolysaccharide accord with the view that the reticulo-endothelial cells assume a dominant part in the disposal of lipopolysaccharide.

(2) The other path involves a gradual elimination of radioactive lipopolysaccharide from the plasma, one part of which (i.e., $\equiv PO_4$) appears in the urine. Possibly this process may be mediated by the serum-phosphatase, which we have shown to be active in splitting the lipopolysaccharide in vitro. The fate of the non-radioactive remainder of the molecule has not yet been investigated.

The toxic component of endotoxins is clearly distinct from the known phospholipid, polysaccharide, and protein fractions and contains a relatively large amount of phosphorus.[9,10] The recent work of Westphal and Lüderitz[11] has characterised this substance as a second, highly insoluble, phospholipid. Tal and Goebel[10] found that the toxic component was detoxified by mild acid hydrolysis, and that the only apparent change was the liberation of dialysable phosphate. Whether the phosphatase reaction which we have described plays a rôle in the destruction or detoxification of living gram-negative bacteria in vivo is an important point to be determined.

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Reviews of Books

Body Fluids in Surgery

A. W. WILKINSON, CH.M., F.R.C.S.E., senior lecturer in surgery, University of Aberdeen. Edinburgh: E. & S. Livingstone. 1955. Pp. 212. 16*s*.

THE past ten years' progress in the study of body chemistry may have been discouraging to those who have no mind for electrolytes; but no-one can deny it has been of considerable benefit to patients. Inevitably the work has been reported diffusely in innumerable articles, and the assimilation of the new knowledge is made much easier by monographs on the subject. This book is an outstanding example: in every page there is evidence that Mr. Wilkinson is a surgeon who lives and thinks in terms of body-fluids and electrolytes; the subject pours out of him without effort and with clarity, since he writes well without prolixity.

The material is rationally ordered, starting with water, followed by sodium, then potassium and acid-base balance, with good descriptions of the clinical states associated with their disturbance. The second half of the book deals with electrolytic imbalance associated with injury, shock, and gastro-intestinal disorder, and with diseases of the heart, liver, and kidney. A chapter on treatment completes it.

Every surgeon will welcome this book, but it will find particular favour with those of pre-war vintage, since their training lacked an understanding of body chemistry and for them the subject is therefore harder to grasp. The subject is now placed at their command in a book written by an expert to make experts.

Modern Public Health for Medical Students

I. G. DAVIES, M.D., F.R.C.P., professor of public health and preventive medicine, University of Leeds. London: Edward Arnold. 1955. Pp. 487. 30*s*.

AUTHORS of textbooks on public health for undergraduates must make a choice. Should they write a flowing, readable, and interesting narrative (an illustrated essay on the mystique of community health) and leave the student, once enthused, to extract the facts for himself? Or should they produce a textbook giving the largest possible number of facts? Professor Davies has chosen the latter course and produced a comprehensive and accurate textbook with all—indeed, in some sections, more than all—the undergraduate needs to know about this subject.

The nineteen chapters begin with a mainly historical introduction and finish with international health, accidents in the home, and health education. Perhaps, as environmental sanitation is entirely omitted, a better title would have been A Textbook of Social Medicine, but within these limits the student, whether undergraduate or postgraduate, will find all he wants. There are particularly good chapters on the measurement of health, diseases of social importance, and handicapped persons. The index unfortunately fails to live up to the comprehensiveness of the text.

Systemic Associations and Treatment of Skin Diseases

KURT WIENER, M.D., dermatologist, Mount Sinai Hospital, Milwaukee, Wisconsin. London: Henry Kimpton. 1955. Pp. 556. £6 6s.

Dr. Wiener's earlier book, published in 1947, was devoted to the skin manifestations of internal disorders. In this complementary volume he describes what is known of the internal derangements associated with dermatoses. He has done an enormous amount of work, and the text has no less than 2759 references from all over the world.

The first few chapters are absorbing, but they are on diseases which might well be classified as internal or general rather than dermatological. Interest flags as the dermatoses give a grudging yield of features of general interest. The second half of the book, dealing with systemic treatments, is equally encyclopædic: but the arrangement and selection of material is often uncritical. The final chapter is about unorthodox treatments, which to the innocent inquirer may seem just as appropriate as many of the empirical remedies in the preceding chapters.

Expensive, extensive, exhaustive, and exhausting.

Peripheral Vascular Disease

A. J. BARNETT, M.D., M.R.C.P., assistant director, Alfred Hospital Clinical Research Unit, Melbourne; J. R. E. FRASER, M.D., M.R.A.C.P., sometime registrar of the unit. Melbourne: Melbourne University Press. London: Cambridge University Press. 1956. Pp. 219. 57s. 6d.

THIS book is based on the monograph successfully submitted by Dr. Barnett and Dr. Fraser for the Stawell memorial prize essay for 1952. Its declared purpose is to present a "practical approach" to the problem of vascular disease of the extremities.

A brief survey of the historical development of the subject introduces a review of vascular physiology. An account of methods of diagnosis, particularly venous plethysmography, and the pathology of common diseases is followed by a discussion of clinical features and treatment. The book does not set out to be an encyclopædia of vascular diseases and the authors concentrate on the common lesions, which they present with a good number of case-histories. There is much to recommend such an approach; but it is surprising that a "practical" book should devote ten pages to the physics of blood-flow and only five lines to the clinical aspects of peripheral emboli. Some lack of balance is also noticeable in the chapter on treatment, in which surgery does not receive enough attention.

Despite these reservations, there is much to admire in this useful book.

Die Überfunktion der Nebennieren

RUDOLF CHWALLA. Vienna: Maudrich. 1955. Pp. 330. £14 2s.

THE large necropsy material of the distinguished Viennese pathologist, A. Priesel, has been the basis of this monograph. Its leading idea is the functional entity of the adrenal gland and the identical pathology of "hyperadrenalism," whether the cortex or the medulla or both are enlarged.

Some diseases and types of constitution are said to be associated with enlarged adrenals: the diseases include arteriosclerosis, hypertension, arteriolosclerotic contracted kidney, diabetes, obesity, pulmonary emphysema, malignant growths (particularly carcinoma of the prostate), urinary bladder, and bronchus, and primary carcinoma of the liver. As for physique, enlarged adrenals are found mainly among pyknic individuals.

The hilar cells of the ovary (as androgen-secreting elements) and the rete ovarii are discussed in detail. Dr. Chwalla notes the occurrence of eosinophil hyperplasia of the pituitary and eosinophil adenoma in conditions usually associated with basophil hyperplasia.

Unfortunately there is no proper statistical analysis of the material; nor does the writer say how the increase of cortical or medullary tissue was ascertained. An intense yellow colour in the adrenal cortex was often taken to mean large amounts of lipids and hence hyperfunction, even without enlargement of the cortex. In view of the rapid turnover of corticoids, this view will be accepted by few pathologists.

Some of the arguments against the functional entity of the adrenals—for example, the hyperproduction of a single one of its hormones, sometimes with depression of another one, and the beneficial effects of cortisone in the adrenogenital syndrome—are not given sufficient prominence.

One in Six

An Outline of the Cancer Problem. I. HIEGER, D.SC., Royal Marsden Hospital, London. London: Allan Wingate. 1955. Pp. 80. 12s. 6d.

WRITTEN for the layman, this short book should acquaint him with the nature, scope, and prospects of cancer research at the present time. Dr. Hieger describes, with the authority of an expert, the extent and character of the problem, the ways of tackling it, statistical and experimental, and the current state of knowledge; and he indicates the possible or probable lines of advance. The immense complexity of the subject, on the one hand, and the industry and ingenuity of those attacking it, on the other, are well illustrated. Among the more striking chapters are those on cancer and ageing, cancer theories, and "lung cancer, smoking and smoke"; and there are instructive photomicrographs, and a useful glossary. It is all excellently done.

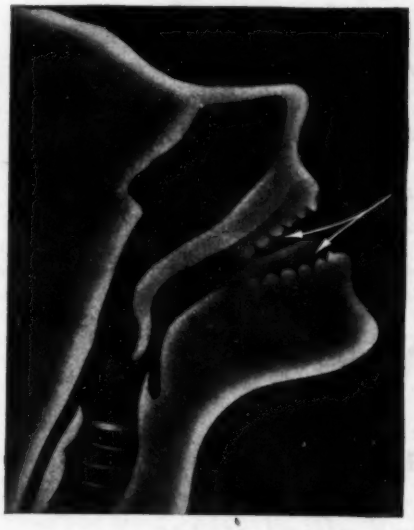
Cybernetics.—The report of the tenth and last conference held by the Josiah Macy, jun., Foundation on this subject has been published under the editorship of Prof. Heinz von Foerster (New York. 1955. $2.75). It includes a contribution by Mr. W. Grey-Walter, D.SC., on activity of the brain.

Chemical Physiology and Pathology of the Mind (London: H. K. Lewis. 1955. Pp. 26. 5s.).—The inaugural lecture which Prof. H. McIlwain delivered at the Institute of Psychiatry last April has now been published as a monograph. In it he describes the contributions of Maudsley, Mott, and Mann to the study of mental diseases.

Studies on Fertility, 1955 (Oxford: Blackwell Scientific Publications. 1955. Pp. 156. 25s.).—The seventh annual volume of the proceedings of the Society for the Study of Fertility is the second to appear in book form. It contains a selection of the papers read at the annual conference of the society at Birmingham in 1955 and some reports on original work from research-workers who are not members of the society.

Les gamma-globulines et la médecine des enfants (Paris: Masson. 1955. Pp. 298. Fr. 2000.).—In December, 1954, the Centre International de l'Enfance held a seminar in Paris on this subject. Prof. A. Tiselius (Uppsala) presided over the meeting and the speakers from this country included Mr. R. A. Kekwick, D.SC., Dr. Reginald Lightwood, Dr. F. O. MacCallum, and Dr. J. C. McDonald. A report of the seminar has now appeared under the editorship of Dr. Raymond Gautier.

StClair Thomson's Diseases of the Nose and Throat (6th ed. London: Cassell. 1955. Pp. 967. 90s.).—This well-established textbook has again been revised by Sir Victor Negus. Of several new features, perhaps the most useful is a very clear description of block dissection of the neck. The international nomenclature has been adopted in a pictorial description of the tracheobronchial tree; and there is a good description, well illustrated, of the transpalatal approach to the nasopharynx. New hope is given in the treatment of spontaneous rupture of the œsophagus, thanks to a greater awareness of the condition and improved techniques in thoracic surgery. We are pleased to see that the confusing term "nasopharyngeal polypus" is rejected as a synonym for nasopharyngeal fibroma; but it seems a pity that the name should be retained at all, especially as the more widely accepted term "antro-choanal polypus" gives a much better idea of the origin and behaviour of these polypi. The descriptions of laryngoceles and of varicose veins of the œsophagus are still inadequate for a postgraduate book of this size, and the subject of laryngeal paralysis remains unnecessarily complicated and confusing. This latter section, however, is improved by some useful drawings of one of the many operations now available for the relief of stridor in cases of bilateral paralysis. Furthermore, these are minor criticisms of a book which is beautifully written and excellently produced, with an unusually fine index. The extensive bibliography has been brought well up to date. The book is sure to keep its position as the laryngologist's most widely used source of reference.



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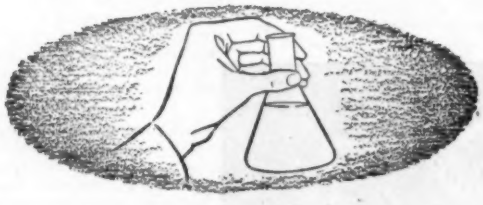

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LONDON: SATURDAY, APRIL 7, 1956

Inflammation and Cortisone

INTEREST in inflammation is as old as medicine. CELSUS, who described its four cardinal signs (GALEN added the fifth), and all physicians for centuries later considered inflammation as a disease, and their treatment was guided by this idea. JOHN HUNTER was probably the first who saw inflammation as a defence against a variety of injuries. The first half of the 19th century brought a number of accurate observations and experiments, among which those of ADDISON and of WALLER [1] were prominent, and they culminated in the classical work of COHNHEIM.[2] The descriptions by him and his predecessors of tissue changes in inflammation were based on in-vivo microscopic observations of transparent tissues, such as tongue, web, and mesentery of the frog. The main vascular events were firmly established by COHNHEIM, and METCHNIKOFF's work on phagocytosis [3] brought further progress. In the years that followed there was much controversy between those who, like METCHNIKOFF, believed in a central cellular defence mechanism and those who laid more stress on humoral factors. LEWIS's [4] brilliant work on the triple response to mechanical injury, and the immediate release at the site of injury of a histamine-like substance, convinced many physiologists that histamine was responsible for the vascular changes of inflammation. ROUS and GILDING,[5] however, showed that there were differences between the vasodilatation produced by scratching and that produced by histamine. For some time interest also centred on hyaluronidase. This enzyme, which hydrolyses hyaluronic acid, a constituent of connective tissues, is produced by some bacteria and was believed to be important in breaking down the host's local defences; but experiments showed that there was no relation between the virulence of bacteria and their ability to form hyaluronidase.[6 7] Meanwhile, another question under investigation was whether the accumulation of inflammatory exudate was the result of increased venous pressure or of increased capillary permeability. Dyes, such as trypan blue, Evans blue, or isamine blue, which, when injected intravenously become protein-bound and normally do not pass out of the circulation, were much used in these inquiries. RAMSDELL,[8] who introduced this technique, held that accumulation of dye in an inflamed area indicated endothelial capillary damage, and this view is now generally accepted. It was soon found that histamine was not the only substance which increased capillary permeability, and MENKIN's work [9] of the past two decades drew attention to other substances found in inflammatory exudates which cause emigration of leucocytes and increased capillary permeability. MENKIN isolated from inflammatory exudates a peptide with these actions, which he called leucotaxine. SPECTOR,[10] working in CAMERON's department, found that in rats enzymatic digests of various proteins caused (1) increased capillary permeability, (2) swelling of endothelium, and (3) emigration of leucocytes. Only peptides of 8–14 amino-acid units produced all three effects; and so did the crystalline pancreatic-trypsin inhibitor, which has a molecular weight of 6000. Of great interest and possibly related to the mechanism of inflammation is a finding reported recently by JEPSON et al.[11] They discovered a pain-producing substance which is formed in human plasma merely by contact with glass. This substance is very similar to or identical with bradykinin, a peptide generated from bovine plasma or α_2-globulin and from human plasma by the action of snake venom or trypsin. The significance of these findings in explaining the mechanism of inflammation lies in the possibility that mere contact of plasma with a foreign body or damaged endothelium, or with any tissue other than normal endothelium, may produce a bradykinin-like peptide.

Interest in the mechanism of inflammation was renewed when it became clear that there was a close relation between cortisone and corticotrophin (A.C.T.H.) on the one hand and the course of infections on the other. Reviewing this subject in 1952, THOMAS [12] was able to collect 115 published reports of animal experiments and observations on human beings. Among the earliest workers, FINLAND et al.[13] described dramatic improvement in pneumonia and SMADEL et al. [14] and WOODWARD et al.[15] recorded similar benefit in typhoid fever; but they found bacteræmia at the same time as clinical improvement. The experimental and clinical work which followed showed clearly that cortisone made many infections worse. Although inhibition of antibody formation was often but not invariably reported, most workers nowadays lay more stress on changes in non-specific general and particularly local defence mechanisms. Investigations of the Shwartzman phenomenon and observations of the course of inflammation in the living animal have been particularly helpful. THOMAS et al.[16 17] found that cortisone-treated rabbits showed no local reaction twelve hours after an intradermal injection of toxin while in the control animals erythema and œdema developed. After eighteen to twenty hours there was still no erythema or œdema in the treated animals, but many small petechiæ appeared. In other experiments, when cortisone (25 mg. daily) was given for four days, the intravenous injection on the third day of meningococcal toxin was followed within

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twenty-four to thirty-six hours by bilateral cortical necrosis of the kidneys in about 70% of animals. It was concluded that a single intravenous injection of toxin produced a generalised Shwartzman reaction in cortisone-treated animals. SPAIN et al.[18] investigated the response to subcutaneous injection of turpentine in albino mice. Cortisone suppressed all elements of the cellular inflammatory reaction, and diffuse tissue necrosis appeared at the site of chemically induced inflammation. SHULMAN et al.[19] produced localised burns in the cheek pouch of the hamster: in normal animals dilated tortuous blood-vessels ("rosette formation") were seen and healing was complete in 80% of the animals after six days; but in cortisone-treated animals the rosette formation was delayed, prolonged vasoconstriction was seen, infections were common, and little or no healing was seen after as long as thirteen days. ZWEIFACH and his associates have described in recent years some investigations of the inflammatory reaction to microtrauma in transparent tissues, particularly the mesentery of the rat, and the rôle of hyaluronidase, adrenaline, adrenal cortical hormones, and other factors.[20–23] Microinjection of hyaluronidase produced sudden tiny ruptures in the capillary wall, in contrast to a gradual change in endothelial permeability after mechanical or chemical microinjury. According to ZWEIFACH, the inflammatory response is a complex reaction which cannot be reproduced by a single biochemical agent, either histamine or leucotaxine.

Further striking results have come from the use of the transparent chamber for the rabbit's ear. This technique, which was introduced by SANDISON[24] in 1928, has lately been improved by ALLISON et al.[25] to permit observations with higher magnification and the application of a controlled thermal microinjury by a heated platinum wire. The circulatory changes followed in this way conform closely to previous findings, but new facts have been added by the study of the cellular reaction. Within a few minutes of injury, leucocytes adhere to vessel walls, at first on one side only—the endothelial surface nearest to the injury. This response may be well advanced in vessels which show no alteration of their calibre or are even constricted. Adhesion to the wall also precedes the emigration of leucocytes, and their movement is, at least in the first phase, a random one without evidence of chemotaxis. After a cell has passed through a vessel wall there is apparently a defect in the endothelium, for quite often one or more cells follow exactly the same route to the perivascular tissue. The movement of leucocytes is one of active motility, but the diapedesis of erythrocytes, which often leads to extensive hæmorrhage, seems to be a purely passive phenomenon. The formation of a gelatinous precipitate near the site of injury, first reported by ZWEIFACH,[23] has been confirmed by a different technique. The prevention of this precipitation and the inhibition of the localised Shwartzman phenomenon by heparin, and the decrease of fibrinogen which is observed during the generalised Shwartzman phenomenon, indicate the important rôle of fibrinogen in the inflammatory response. When large doses of cortisone are given to the experimental animals before the thermal injury, a profound change takes place in the inflammatory reaction. There is evidence that the circulatory effects, such as prolongation of the ischæmic phase, are of little importance and that the main action of cortisone is exerted during the earliest stages of inflammation, thus inhibiting and delaying the adherence of leucocytes to endothelial walls and therefore their emigration and accumulation in tissue spaces. The findings suggest that cortisone has a direct action on the endothelial cells and on leucocytes, protecting them in some way against the diffusible breakdown products of tissue or plasma components.

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The American Medical Student

Dr. JOHN ELLIS prefaces his account of the American medical student[26] by an account of "medical students everywhere." Most of them, he says, are, at the time of coming to their medical school, poorly educated—not so much perhaps because they have learnt so little of the "humanities" as because of the low standard of their early scientific education. They have difficulty in realising that, despite scientific advance, medicine is still full of mysteries, and they are astonished that therapy is so often of no avail. Many are convinced that they should try to acquire the whole content of medical knowledge, and they are attracted to teachers whose didactic dogmatism makes learning a passive process. Above all, they appreciate results: they like to see the patient get better. "Hence the attraction of curative medicine as opposed to preventive: the feeling that organic disease is the really important thing: the preference for the physical sign rather than the more difficult elucidated history." Lastly, the long and sheltered years of study make them apprehensive about taking responsibility; and to devise ways in which they can be trained to do so is becoming increasingly difficult.

Beyond these universally shared qualities, Dr. ELLIS reflects upon the characteristic traits which distinguish the American student. Unlike his British counterpart, who has to "decide on medicine" at 16 and then work intensively for stiff examinations in physics, chemistry, and biology, the American student can leave his decision until he is at least 18. He gets his premedical education in a more leisurely way at college; and, though this may be of a lower academic standard, he emerges from it not only more mature but also without those bad habits of learning which are so often acquired by British students in their struggle to memorise vast quantities of facts. These college years also help to prevent mistakes in the "preselection" of students, which Dr. ELLIS regards as always more important than the much more commonly discussed selection. "The high standard required in preliminary science by British universities tends to frighten away from medicine the boy who is unaware of any aptitude

26. Ellis, J. R. *J. med. Educ.* January, 1956, p. 42.

in these subjects. This is, I think, less likely to happen in America."

In our own medical schools, though "fear of examination failure with resulting withdrawal of financial support is very great," much remains still of that carefree attitude to life for which the British medical student has always been famed. By contrast, the American student is a very serious person and works much harder. "He has had plenty of fun at college and is now ready and able to take things seriously." His devotion to his studies does not seem to arise either from fear of examinations or merely from awareness of competition with his colleagues. "In the schools I have visited . . . perhaps there is still some apprehension about anatomy and other preclinical subjects, but I think it is mild and probably will soon be as negligible as that felt for final examinations." Dr. ELLIS is impressed by the American student's readiness to speak his own mind "to any teacher at any time," his critical attitude, and the uninhibited manner and clarity with which he expresses himself.

The main reason why the American student works hard is that he is impelled to do so by "that most powerful incentive to work—interest in it. The interest that the average student in any faculty in any university takes in his work must be in large measure merely a reflection of the interest his teachers take in him"; and Dr. ELLIS speaks enthusiastically of the interest taken in the individual student by the majority of teachers in American medical schools. No doubt there are still many places where "teaching is regarded as synonymous with talking," where, nameless in a crowd, the student must fall back on his books, only to impair his education, eyesight, and sanity in a hopeless fight to achieve "complete coverage." But the present trend is away from this. In many medical schools "the process of teaching is regarded as imparting inspiration and guidance to learning, with the imparting of factual knowledge only so far as is required by the former . . . where such an attitude of mind exists on the part of the teachers there is little need to look further for incentive to hard work on the part of the student and the curriculum is by comparison almost unimportant."

All systems, however, are liable to the defects of their qualities. Dr. ELLIS feels that some American medical schools, though undoubtedly right in putting the chief emphasis on education, do not give their students enough technical training. "Medical education, while being subject to the general principles of all education, is also subject to the peculiar needs of training for work in the profession of medicine": facility in the technique of clinical methods and practical skill in obtaining information from the patient is vitally important, and Dr. ELLIS suspects that American students are weak in this respect. He attributes this weakness first to a lack of sound introduction to clinical methods at a time when their whole attention can be focused on it, and secondly to the absence of constant and prolonged practice of it.

"It is not that American medical students take poor histories and make poor examinations; it is that they appear to suffer from a lack of balance between their knowledge of medicine and their knowledge of diseased people. This second knowledge can surely only be acquired by the steady application of clinical methods (with increasing skill) to patients. This constitutes experience, and when there is lack of balance between knowledge and experience there is an increased feeling of insecurity in dealing with patients."

This feeling of insecurity might explain why the final-year American student is sometimes unable to make use of his own knowledge—why he is so often overcome by a sense of inadequacy when faced with the problem of the "whole man" rather than a particular disease. Dr. ELLIS points out that, though postgraduate training could do much to remedy this defect, it is still outside the control of the American medical schools. It is a great thing that the new graduate should leave his school with the ability to learn and a will to go on learning; but he will be handicapped until he acquires clinical skill to match his knowledge.

Dr. ELLIS would probably agree with us that, if American teachers tend to neglect technical training in favour of basic education, we in this country have hardly yet begun to realise how far we are guilty of the opposite error. To those who regard American medicine as excelling mainly in the use of techniques, and to those who think of American medical schools as huge and impersonal, it will come as a surprise to hear how deeply American teachers are concerned with fundamental principles and how much thought, time, and trouble they devote to their students as individuals.

Protection and Liberty

LENDING money to friends is said to be a sure way of losing their friendship, and the same applies to helping races or individuals whom we may think need our care and protection: most of the horrors of history have sprung directly from well-meaning efforts to change people against their will. The obligation to try to help certain types of people, even against their wishes, is inherent in our social structure; but those who spend their lives protecting their neighbours from themselves need expect little thanks from the objects of their solicitude and must be prepared for the criticism of those who prefer the touchline to the centre of the field.

Assuming that we know what is best for our neighbour, we must be prepared to answer two questions on our stewardship: in what circumstances can we force him to follow our advice, if not our example, and at what point should we retire and leave him to look after himself? As a nation we have long been the self-appointed protectors of many races; and today our problem is when and how to withdraw without undoing the good work we have done. We fear to hand over our garden while the serpent is at large. But we should not forget that most peoples prefer their own misgovernment to good government by others, and think that they can deal with snakes as well as anyone else.

At home we have to face the same problems in our dealings with some of our fellow citizens. In our society everyone is legally under care until he comes of age; but his emancipation is normally only a matter of time. Some 3 per 1000 of the population, however, are liable to qualify for compulsory care because they are judged to be mentally defective; and though for low-grade defectives the need for care

is obvious, the high-grade feeble-minded person often presents a complex social and medical problem. The Mental Deficiency Acts require a twofold assessment: there must be medical evidence of mental defect originating before the age of 18 years, and social evidence that, broadly speaking, the person in question is under one of the social disadvantages enumerated in the Acts. The social criterion of unfitness for independence of one group of this high-grade class—those "found neglected"—has lately been defined by a High Court judgment reported on p. 378. Before this the view was taken that a defective could be detained as "found neglected," as it were, in anticipation of social failure, but it will now be necessary to show that failure has in fact occurred and that the person is physically suffering thereby.

Most of those who have to administer the law will welcome this clarification; but though the cause of individual liberty is upheld, it includes the liberty to suffer. In medical terms, the symptoms of the disorder must now be manifest before treatment may be ordered: this ensures that only the sick will be treated but it appears to overlook the value of prevention. However, if the public accept this judgment, doctors should not object to it. The fact that high-grade mental deficiency, like delinquency and many other social evils, is sometimes associated with disorders which can be treated by medical means, is no reason for accepting it as an exclusively medical responsibility. Just as in mental illness the community is beginning to share with the doctor the responsibility for prevention and aftercare, so this judgment may lead to an increasing awareness of the social needs of high-grade mental defectives, many of whom could be dealt with in the community if society would accept them.

Annotations

MITRAL STENOSIS AND PULMONARY HYPERTENSION

THE mechanism and significance of pulmonary hypertension in mitral stenosis is not fully understood. At present, the evidence suggests that it arises in at least two ways. Organic narrowing of pulmonary arterioles was described at necropsy as long ago as 1936[1]; and more recently it has been confirmed in a proportion of biopsy specimens,[2] pointing to a structural cause for the increased pulmonary resistance. On the other hand, the pulmonary-artery pressure has been shown to rise sharply in response to exercise in severe mitral stenosis[3,4]; and Davies et al.[5] found that it could be considerably reduced in certain cases by giving the ganglion-blocking agent, hexamethonium. Since in neither circumstance did the cardiac output vary significantly, these observations suggest the presence of a reversible vasoconstriction mediated through the autonomic nervous system. Whether, as Wood[6] believes, such an increased vascular resistance is a protective phenomenon guarding the lung capillaries against the consequences of a high pressure is not yet decided. Davies et al. questioned this view after they had reduced the pulmonary arteriolar resistance without dire results in several patients, including 2 in whom an attack of pulmonary œdema rapidly cleared after hexamethonium.

Scott et al.[7] have recently confirmed that the pulmonary-artery pressure may be reduced by ganglion-blocking drugs. Their 6 patients were given tetraethylammonium chloride (T.E.A.C.), and the pressure fell in 3. They suggest that a good response to T.E.A.C. may predict a successful result from valvotomy, and this was confirmed in 2 patients who underwent surgery, though a good result was also obtained in a patient who had not responded to T.E.A.C. The experience of Baker, Brock, and Campbell[8] suggests that organic vascular changes may be reversible; for in some of their patients the pulmonary-artery pressure continued to fall for as long as two years after valvotomy. If this is so, preoperative assessment with T.E.A.C. or hexamethonium, although of theoretical interest, would be of little practical value; and in any case many more observations are needed. Aitchison, Cranston, and Priest[9] have recently reported a rise in pulmonary-artery pressure in patients with mitral stenosis to whom they gave hydrallazine hydrochloride ('Apresoline'). Since this drug lowers systemic blood-pressure, such a result was at first surprising; but it is apparently due chiefly to the tachycardia it induces. It is well known that a rise in heart-rate, by lessening diastole, renders pulmonary œdema more likely when there is obstruction at the mitral orifice.[10] Consequently Aitchison et al. warn against giving hydrallazine to patients with mitral stenosis.

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THE UNVACCINATED NURSE

APART from one or two steadfast opponents of vaccination, no-one will deny that recent successful vaccination is efficient protection against smallpox. Unfortunately, the proof is too often made plain when those unprotected by vaccination come in contact with the disease, and fall ill. By no means rarely those who are at particular risk—nurses, orderlies, or domestic staff—are among the victims. A recent instance was the Brighton outbreak in 1950: 13 nurses and hospital domestic servants had smallpox after contact with an R.A.F. officer who was admitted to the hospital with unrecognised smallpox. His clothing was sent to a laundry, and 6 people there were also infected. 5 of the hospital staff and 2 of the laundry workers died. In the ward concerned, 7 of the staff were unvaccinated, and out of a total of 113 nurses and maids in this infectious-diseases hospital, 27 had never been vaccinated.

During the war a number of soldiers abroad died of this preventable disease; and in many cases there was no visible evidence of successful vaccination to support the written record. The need for prompt revaccination of those exposed to the risk of contact was illustrated when more than 30 of the staff and patients of a general hospital overseas contracted smallpox. A known case of confluent smallpox had been admitted to this hospital and imperfectly isolated, and there was some delay in revaccinating the nurses and orderlies—with the inevitable sequel. Fortunately, the disease among most of the contacts was well modified, for they had been vaccinated in infancy or on joining the Army, or both.

Attention has been drawn recently to the vaccination state of hospital nurses in this country. The Sheffield Regional Hospital Board[11] has noted that nearly three-quarters of the nurses and other hospital staff in the

11. *Sheffield Telegraph*, Feb. 11, 1956.

region need vaccination. The board suggests that hospital management committees should appoint someone to "persuade the staff to be vaccinated"; and there can be little doubt that suitable propaganda within the hospitals would increase very considerably the number of those protected. It was also suggested that the practice in many hospitals before 1948 of making vaccination a condition of employment might be reintroduced.

The matter is closely linked with infant vaccination: the rate in this country is now only 34%. Primary vaccination in adults carries a greater risk of complications than in infants, and there is some doubt about the wisdom of vaccinating large numbers of adults, unless there is immediate danger. But nurses, and particularly nurses in infectious-diseases hospitals, run special risks, and we share the misgiving of the Sheffield board at their vulnerability. The annual reports of the Ministry of Health have repeatedly drawn attention to this serious position; and the Ministry has just produced a revised version of the memorandum [12] on smallpox vaccination. Yet apparently not enough has been said, for clearly not enough has been done. Air journeys from smallpox-endemic areas take less time than the incubation period of the disease. There have been 23 importations of variola major in the past ten years, and there will undoubtedly be more; it is very probable, also, that unrecognised cases will once again enter hospital. *All* the staff *must* be protected.

AMŒBÆ PRESENT?

EVERY morning a long file of black soldiers in white pyjamas used to approach the laboratory down the avenue of palm-trees. Each bore before him a bedpan decently shrouded in a "cloth, distinctive." They were the inmates of the dysentery ward bearing their daily offerings. After a few weeks it was easy to demonstrate without hesitation the amœbæ of all sorts, both ambulant and encysted. But the mind goes dim as quickly as the eye, and most pathologists who thought that they "knew the amœbæ" would admit that when they see a suspicious object under the microscope today their hand reaches for the textbook and its pictures. Though these will refresh the memory, for the student of tropical medicine no book can replace the teaching of the master at the bench—and weeks, months, and years of experience. The tricks of the trade are many and hard to put on paper. Some rely for detection upon the flash of the refractile amœba as the microscope is brought into focus: others on a background of weak eosin to distinguish protozoon from trash. Arguments on the proper strength of the iodine solution to display nuclei have never stopped. Some put great faith in concentrating the cysts by changing the specific gravity of the substrate: others say that the examination of up to ten natural specimens yields more profitable results. When the masters disagree the pupil may do worse than to follow undeviatingly the methods of one of them until he knows enough to disagree. Into a few pages of the newly founded *Central African Journal of Medicine* [13] Sir Philip Manson-Bahr has distilled a life-time's knowledge of amœbiasis. Here are the wisdom of experience and methods proved by time. Many a solitary doctor in the further parts of the world will, having read this article, turn back to the bench with renewed enthusiasm; but the author still would be the first to admit that without a microscope and ample material the student will learn little by reading alone. It is probable that this difference between experience and booklearning explains the wide range of estimates of the occurrence of cysts of *Entamœba histolytica* in this country. The practised eye in the hospital for tropical diseases sees things overlooked in most laboratories. It is time for a clear answer to the question, "How many 'normal' people in this country are passing cysts?" and, as a corollary, "Why do we see so few patients with the classical disease?"

12. Ministry of Health: Memorandum on Vaccination Against Smallpox. H.M. Stationery Office. Pp. 8. 6d.
13. *Cent. Afr. J. Med.* 1955, 1, 269.

PROSPECTS FOR LABORATORY TECHNICIANS

DURING the past twenty years laboratory technicians have become more numerous and more necessary, more skilled and more responsible, and they are now essential members of the team headed by the pathologist. Similar changes have taken place elsewhere, in pharmaceutical manufacturing houses and in Government departments, and many of the young men who would once have taken an apprenticeship now stay at school a year or two longer and then enter some laboratory. If the National Health Service is to get its proper share of the best men for its laboratories, the financial prospects it offers should broadly resemble those in industry and in comparable grades of the Scientific Civil Service. It may be useful to compare the salaries offered to men of comparable education and skill for jobs of similar responsibility, in the National Health Service (under the new grading and salary structure recently announced [1]), in a large pharmaceutical manufacturing firm, and in a large institution of the Scientific Civil Service.

Entrants, who are expected to have the General Certificate of Education with passes at ordinary level in four subjects, including English, mathematics, and a science, have salaries nearly £100 per annum less in the National Health Service than in industry or in the Civil Service; the difference falls to £75 a year by the age of 21, but it is not until at least five years after entry, when the associate examination of the Institute of Medical Laboratory Technology has been passed, that the scales coincide. In the National Health Service there are two marks of efficiency, the intermediate and final examinations of the Institute of Medical Laboratory Technology, which do not exist in the Civil Service grade of scientific assistant, though in industry the supervisor's assessment of merit, on which salary increases depend, probably plays an equivalent part.

The selection of supervisory technicians varies greatly. In the National Health Service they are selected from those who have passed the final examination of the I.M.L.T. in a second branch, some six years or more after entering the laboratory; and to gain this advancement (and a further promotion to chief technician five or ten years later) the technician may have to move his home. In industry promotion is by selection, and if a move is necessary the employers often give financial help. In both cases, the senior or supervisory technician can expect a maximum salary of between £800 and £1000. The Scientific Civil Service selects its supervisory technicians, who are called experimental officers, by open competition at ages between 18 and 31, from those who passed either the G.C.E. at advanced level in two mathematical or scientific subjects, the intermediate B.SC., or the Higher National Certificate, or who hold a pass degree—or who have attained equivalent standards, according to age at entry. Scientific assistants, the junior grade, are considered only when they are recommended by their present department or have attained the requisite educational standards. Successful candidates can rely on attaining a gross salary of £935 in thirteen years, and some may enjoy accelerated promotion. A very few may be promoted to higher grades whose duties have no equivalent in the hospital service.

The range of salaries offered to technicians in the National Health Service under the new agreement is thus roughly comparable with those elsewhere; but there is

1. Whitley Councils for the Health Services (Great Britain): Professional and Technical Council "B." P.T.B. circular 53.

no financial recognition of the added responsibility of the N.H.S. technician's work as part of a team concerned with the well-being of patients. The low salary at entrance is a reflection of the low educational standards which were accepted by the I.M.L.T., but now that these standards have been raised there are good reasons for making the scales of junior technicians the same as those of the "scientific assistant" grade of the Civil Service, which would require a further increase of £80–100 a year up to the technician grade (holder of the A.I.M.L.T.).

The most disappointing change in the new arrangements is the limitation of senior technicians in small laboratories to a maximum of £725. Their responsibility for other staff may be less, but their responsibility to the pathologist and to the patient is greater. This limitation will increase the drift of energetic and ambitious young men to the large laboratories in the towns, leaving the equally important laboratories in country hospitals inadequately staffed, both in quantity and in quality. On the other hand, there is provision for promoting technicians who are regularly engaged on individual work of special difficulty, responsibility, or skill as senior technician II (up to £800) or chief technician I (up to £900), independently of the general staffing of the laboratory. If this provision can be used to upgrade technicians in sole charge of a laboratory or in charge of blood-grouping and compatibility testing—who certainly undertake work of special responsibility—it may counteract to some extent the centripetal effect of the new grading.

On the whole the new salary scales are reasonable; but they are not yet likely to attract many school-leavers, nor do the senior scales offer a good career in a country hospital. It might be an advantage to unite the three grades, senior technician I and II and chief technician I, into a single grade of supervisory technician, which would take nineteen years to climb, but which could be entered with six or thirteen years' seniority by those appointed to the grades now called senior technician II or chief technician I.

ANOTHER FAMILIAL ENCEPHALITIS

WE remarked some time ago [1] on the difficulty of framing a rational classification of the different types of encephalitis in childhood. Brewis [2] showed that less than a third of cases were sequels to recognised infections. Classification in terms of causal agents is usually impossible, and Brewis suggested a useful symptomatic classification; but he found that nearly a quarter of his cases were too bizarre to fit into any group.

A familial encephalitis affecting 3 children of the same parents was described by Miller and Gibbons [1 3] in 1954. Harvey, Haworth, and Lorber,[4] of Sheffield, have now added a fresh syndrome to the familial group. A father and 5 of his children were affected. The father was mentally retarded, and he had kyphoscoliosis, choreoathetosis, and pes cavus. His children fell ill in, as it were, familial epidemics characterised by fever and often by loss of consciousness. After the acute illness, athetosis, hypotonia, and mental dullness remained as sequelæ. The wave of acute illness recurred at least thrice. After each attack deterioration was evident. Very careful investigation by the Sheffield workers failed to reveal any signs of the known degenerative diseases of childhood, nor, indeed, did their special investigations reveal anything more than some non-specific electro-encephalographic changes.

Harvey et al. suggest that this syndrome may have a double ætiology: the acute febrile episodes may have been attacks of viral encephalomyelitis striking down brains which were genetically predisposed to fail in a particular way.

1. *Lancet*, 1954, ii, 374.
2. Brewis, E. G. *Brit. med. J.* 1954, i, 1298.
3. Miller, H. G., Gibbons, J. L. *Ann. intern. Med.* 1954, **40**, 755.
4. Harvey, C. C., Haworth, J. C., Lorber, J. *Arch. Dis. Childh.* 1955, **30**, 338.

THE LIVER IN SARCOIDOSIS

SARCOIDOSIS is often suspected on clinical and radiological evidence. In the absence of a specific biochemical or bacteriological test, however, the diagnosis is finally reached by the exclusion of other diseases, especially tuberculosis and other varieties of granulomatosis. Histological confirmation, although highly desirable, is usually lacking since it entails a biopsy examination of the lung or an affected and accessible lymph-gland. Aspiration biopsy of the liver provides a much more convenient method of obtaining material suitable both for microscopy and bacteriology.

The first account of liver biopsy in sarcoidosis appeared in 1943.[1] In the next ten years several small series were published dealing with 92 patients in 71 of whom sarcoid follicles were demonstrated in the liver. Mather, Dawson, and Hoyle [2] have lately recorded the most extensive and detailed study of this kind yet published. It is based on 200 biopsies in 93 patients with the clinical and radiological diagnosis of sarcoidosis, in 32 with various forms of tuberculosis, and in 37 with miscellaneous diseases. The results fully confirm the great diagnostic value of this procedure. Typical lesions were found in 59 of the 93 cases of sarcoidosis. The proportion with positive findings appeared to be independent of the clinical manifestations, of the tissues clinically affected, or of the degree of tuberculin sensitivity. A comparison of the lesions with those in tuberculosis showed that in the absence of caseation the two are indistinguishable. Attempts to demonstrate acid-fast bacilli microscopically, by culture, or by guineapig inoculation were also equally unsuccessful. Repeat biopsies on several patients revealed the remarkable persistence of the characteristic follicles in many cases, although sometimes clinical recovery was accompanied by complete resolution or hyaline scarring. Repeat biopsies were also used to study the effect of treatment. Only combined treatment with cortisone and streptomycin produced significant results; in 3 out of 9 patients the lesions disappeared completely, and in the remaining 6 decrease in size or number was accompanied by fibrosis.

The degree of hepatic involvement is noteworthy. The estimated average number of lesions in the whole liver in the positive cases was 150,000. Despite this severe involvement there was little evidence of disturbed hepatic function. Hyperglobulinæmia, when present, was more probably the result of the generalised disturbance of the reticulo-endothelial system than an indication of hepatic dysfunction. Histologically, too, the liver parenchyma was normal apart from some fatty change in about 10% of cases. Diffuse fibrosis, which so often affects the sarcoid lung, was notably absent from the liver.

A comparison of the prevalence of hepatic lesions in sarcoidosis and tuberculosis is of interest. In miliary tuberculosis tuberculous lesions have been found in the liver in every one of the few cases investigated but in primary tuberculosis in only 16 out of 25 cases. Thus the proportion of positive findings in sarcoidosis and primary tuberculosis is almost identical. If the two diseases are entirely unrelated the similarity of these figures is remarkable. Failure to demonstrate tubercle bacilli in sarcoid lesions is the major objection to regarding sarcoidosis as a manifestation of tuberculosis. If, however, as Mather and his colleagues suggest,[2] sarcoidosis represents an exaggerated and long-lasting reticulo-endothelial reaction following primary tuberculosis, this criticism is largely met. The chemical demonstration of specific bacterial residues in the lesions [3] would give strong supporting evidence.

1. Van Beek, C., Haex, A. J. C. *Acta med. scand.* 1943, **113**, 125.
2. Mather, G., Dawson, J., Hoyle, C. *Quart. J. Med.* 1955, **24**, 331.
3. Consden, R., Glynn, L. E. *Lancet*, 1955, i, 943.

The Widdicombe File

XXXII. THE BASE DEGREES BY WHICH WE RISE

DEAR BARBARA,

Thank you for sending me such a helpful account of the Faculty of Omphaloscopists and their exams. No, I'm not proposing to chuck pathology and turn omphaloscopist at my time of life. It is merely that I am trying to make up my mind about some problems of organisation and exam structure that are worrying pathologists these days, and your Faculty is an accepted model of efficiency in these matters and it seemed worth finding out more about it. Perhaps you'd like to know a little about us in return. (I ought by the way to say that the worried pathologists include several more or less official committees; but I know what the committees are up to only at very much umpteenth hand, and speak only as the most private of private individuals.)

You might ask then what sort of representative organisation we pathologists have, what sort of regulations there are as to admission to our branch of the profession, and what examinations there are which the aspiring pathologist must take. And I would answer you, with only a little exaggeration, as to the first, none, as to the second, none, and as to the third, none again. This will not be believed in Venice? Yet it is true.

Unlike nearly every other specialty, including yours, pathology has no exam structure. If the recent graduate wants to become an omphaloscopist, he knows he must pass as soon as he can his D.OMPH.: later, if he aspires high, he can go for his F.F.OMPH.R.C.S. The array of similar diplomas—D.M.R., D.A., D.C.H., D.P.H., D.OPHTH., D.OBST.R.C.O.G., D.P.M., and so on—with a variety of higher degrees to match, speaks for the generality and popularity of the system. Failure to acquire the correct diploma is the clearest of red lights against persevering in any of these specialties. But not so the young pathologist. The D.C.P. and D.PATH. exist, but hardly do more than exist so far as this country is concerned—I'll come to them later—and higher degrees are by no means necessary at any stage. There are several distinguished professors of the subject who take a simple pleasure in flaunting their bare M.B. Consultant jobs admittedly go nowadays usually to people with some sort of higher degree, but the higher degree may be one of several most diverse sorts and there is no agreement as to which, if any, is most worth having.

Our absence of exams is matched by our absence of professional organisation (the two things of course nearly always go together—admission to the cult by ordeal is as characteristic of professional bodies as of primitive souls). We have the Pathological Society, in professional standing as high as any of its kind in the world. Like all successful societies, it is getting too big: like all successful fields of science, pathology is getting too big for one society, and only the last-ditch determination of a few diehard general pathologists to understand every paper delivered, or ask questions until they do, preserves its meetings from unintelligibility. By and large, however, it is still the respected fulcrum of pathology as a science in this country. But with the political aspects of pathology it will have nothing to do. Like Gallio, it says:

> "....that is a question of wages and names
> And I know the strife it brings
> I will not pass upon any of your claims
> I care for none of these things."

Firmly and loftily, it insists it is a Scientific Society, unconcerned with the affairs of the market-place. Pig-headed, perhaps, but also longheaded. When scientific societies start playing politics, usually a rush of splinter groups starts; and soon it is one of the splinter groups that is the real scientific society, and the parent body is a mere talking figurehead. But, as a result of the political nihilism of the Pathological Society, its main splinter party, instead of being a ginger group of young pathologists, is ambitious of turning into a Representative Body. The Association of Clinical Pathologists has remained a second eleven scientifically; but it is willing, unlike its senior partner, to recognise that pathology is not only a science but a way of earning a living. (Do not think one must therefore despise the A.C.P. Our two societies represent the mundane and the lunar, the *yin* and the *yang*, of a scientist's existence today: he must give his work, and he must be paid for his work.) Willing though it may be to organise us, it is not yet very successful: it is handicapped not so much by being young and brash and too openly technological in its approach, but because many pathologists—including many of the older and most influential—just frankly do not want to be organised: and those few who enthusiastically believe in organisation have the most diverse views as to how it should be done.

This agnosticism about organisation, this rottenness at the core (as you, Barbara, with your well-drilled omphaloscopists, must think it), has many roots. For one thing, we include, to our great benefit, the best array of out-and-out individualists—not to say eccentrics—to be found in medicine. For another, organisation entails an admission that ours is a specialty like any other, whereas all true pathologists know in their hearts that pathology is not a specialty in medicine, but *the* basic science of medicine. (To claim that we are not merely consultants, but consultants' consultants, smacks a little of pride.) It is to be noted that the urge to organise comes mostly from the clinical pathologists, to whom avowedly pathology is just another ancillary diagnostic service for the hospital.

Various sorts of organisation have been suggested. A College of our own?—we can't afford one. A Faculty?—but of what? The Academy of Medicine, uniting the four Colleges, seems still a pipe-dream. We could hardly become a faculty of the Obstetricians or the G.P.'s. There remain the Physicians and the Surgeons. The R.C.P. won't have us (or anyone: their constitution remains and will remain Linacrean). A pity this: there's much to be said for it on both sides: but the College remains as narrow in some of its ideas as the preposterous finger's-breadth off Trafalgar Square to which it clings so sentimentally. It is perhaps overstating the case to apply to them Eliot's

> "Do not let me hear
> Of the wisdom of old men, but rather of their folly,
> ....their fear of possession,
> Of belonging to another, or to others...."

But they seem sometimes, whatever their merits as individuals, as a College to be a little over-preciously concerned with their integrity. The case is otherwise with the R.C.S. The Surgeons are broader-minded (perhaps just richer) than the Physicians, and would probably have us. But *timeo Danaos*: there is the old Spanish proverb to be remembered: "Take heed of an ox before, a mule behind, and a College of Surgeons on all sides." Moreover, while it is legitimate for Anæsthetists and Radiologists and Omphaloscopists to fall in behind the surgeon's antique drum, it would be more than a little infra-dig for *the* basic science of medicine. Shades of papa Virchow!

Exams are at present the crux of the matter. The young man entering pathology, needing a motive (whether he realises it or not) to preserve in him his studently habit of work, sees with mixed feelings his contemporaries

settle down to the grind for their diplomas and memberships and the like. We attract a high proportion of good exam candidates (this department holds at the moment the top students of three successive years) and it irritates such a man to see his less gifted classmates, by mere application and tagging on to the right ski-lift of time and jobs, acquiring an ever more glittering array of letters after their names.

He can, it is true, take the D.C.P. or the D.PATH. of the University of London. But the D.C.P., excellent in itself, has become too easy for those who take the Postgraduate School course and too hard for those who don't, and has ended up almost entirely a colonial preserve. And I have yet to meet anyone who bothered to take the D.PATH.

Above that level, most people take an M.D. But before I come to that, let me examine the main alternatives. The most important, because most often attempted, is the M.R.C.P. Now it happens that in the eyes of the Minister of Health (to whom all consultants must be Physicians, Surgeons, or Obstetricians) we count as coming under the College of Physicians, and it is therefore very reasonable of us to attempt to become members of that College. But now that good anæsthetists and good theatre sisters and good transfusion services have taken most of the adventure out of surgery, and physicians have rediscovered the pleasures of research, glamour and hordes of candidates have returned to Pall Mall, and the palings that guard it have been pitched correspondingly higher.

The failings of the M.R.C.P. exam as a qualification for physicians don't concern me here: they are probably not very serious. And even so far as the pathologist is concerned it's not very unreasonable to ask him to write a stiff paper in physiology and physician's medicine, and even stand his viva in them, for all medicine—all human biology come to that—is grist to his mill (he ought to be able to, and often could, make a fair stab at most of the F.R.C.S. and M.R.C.O.G. papers too). But the clinical exam is another matter. The ability to spot a shaded chest resonance or a glossopharyngeal paralysis or a flattened T in lead V436, or to winkle the crucial history out of a hysteric—these are not of the least importance to anyone but the practising consultant physician: they are his special skill, his party trick. (It would be as irrelevant to ask the physician to sort out a really sticky reticulosis under the microscope, or to isolate an abnormal hæmoglobin, or phage-type a few staphylococci: these are *our* party tricks, but the pathologists who are graciously permitted to act as examiners for the M.R.C.P. are not tempted to introduce them to that exam.)

It is true that one can be let in by the back door on submission of published work. There are snags about that though. There is the back-door atmosphere, the uncomfortable implication that one had funked the honest examination. By the time one has written enough papers to qualify, an M.R.C.P. is not as much use as it might have been earlier. And it *is* possible to find one's submission rejected, and that is a worse blow in one's orgulous forties than in one's resilient youth (though, of course, it can be managed so that hardly anyone knows about it).

If the R.C.P. is to be accepted as our College, it ought to contain more pathologists. And the only proper way to this is the institution of an M.R.C.P. (PATH.). But that seems improbable. There is of course the M.R.C.P. (PATH.) of Edinburgh, but the unnatural keenness of competition among physicians has given to the Edinburgh Membership in medicine, merely because it is ever so slightly easier than the London one, an undeserved stigma as a soft option, and the reasonable and respectable pathological Membership has suffered in consequence.

One comes back to the M.D., and, as I said earlier, most people take it. But the M.D. is a most nebulous and unsatisfactory degree. Every university is a law to itself in the standard it expects. In at least one it can be had for little more than the asking by anyone on the teaching staff. In most a thesis has to be of a remarkably low standard before it is rejected altogether. Some universities demand a thesis alone, some an exam alone, some either, some both. Contrast the M.R.C.P.; or even, nearer home, the M.B.: the latter is the stiffest baccalaureate going in any university, its standard is even, and a mere pass in it is equivalent to good honours in most subjects, while the M.D. is in many universities the cheapest doctorate (academically cheapest, not in cash). And because nearly all M.D.s are tied to the M.B., one cannot pick and choose: if the university of one's qualification offers a poor M.D., one can only be content with it.

It is not surprising that there is a movement towards medical PH.D.s. One has there at least a fairly even standard, and thesis regulations which on the whole work well. But the letters have an odd unmedical look after one's name, and except for academic appointments they probably still frighten more than attract the jungly fringes that still control most selection committees. And there are other snags.

What's to be done? If we must have an exam, I hanker still after a London M.R.C.P. (PATH.)—with the same written paper and (within limits) viva as the physicians, but a more appropriate practical exam. Failing that, a Cambridge M.D. or a Scottish M.D. at commendation level, thrown open to all comers and with free use of external examiners. Or perhaps, as a last resort, a Fellowship of the Pathological Society (preferably, for ostentation, the Royal Pathological Society), with a thesis, a stiff practical exam in one elective subject, and a stiffer written paper in medicine-as-a-whole. This last and least likely I especially like to contemplate, for it must go without saying that all such established pillars of the society as myself would automatically (and cheaply) become Foundation Fellows.

Cloud Cuckoo? Manifestly. None of these is likely to happen. Yet, after all, does it matter? For in truth, Barbara, we do not do so badly as we are. What purpose, in the last analysis, do all these exams serve? Vainglory, and the profit of the examining bodies (who might else have to find it in even more questionable ways)—granted, but what else? A coarse sieve for the early rejection of hopeless aspirants and a rough guide for appointment to jobs, and perhaps a stimulus to work at a critical stage of one's career—who would honestly claim more for them? But though some pathologists would have been better discarded early, and some selection boards make mistakes, and some of us don't work as hard as we ought—though all these things happen, I know of no evidence that they happen more often among us than in more carefully organised trades, or that the adoption of a rigid exam structure would make the least difference.

We have of course two things in our favour that perhaps apply rather less in other subjects. One is our papers, of which we write more than most people. No-one worth his salt can sit daily in a pathology laboratory watching the continual pageant of the so-called routine without feeling the urge to tell the world about some of it, and a pathologist who doesn't write a paper or two as often as he can can nearly always be written off. And once one has committed oneself to print a few times, one is exposed for good or ill to the judgment of the discerning eye better than by all the testimonials and degrees and certificates in the world.

The other is our professors. Our professors possess a unique point of vantage between the preclinical and clinical fields. You can divide university chairs into two main groups—those in subjects like physics and Greek, where the mere name of professor silences argument, and those in subjects like art or law, whose professors may be excellent fellows but whom one doesn't by mere virtue of their professorships regard as the best painters or counsel. The preclinical subjects fall into the first group, the clinical into the second. It is not so long ago that most clinical chairs were mere pickings of the senior honorary, often a sort of graceful retirement for one who had shot his bolt (and made his pile). Even in these days of successful professorial units the independence of the others is jealously guarded (probably rightly, in the long run: a whole department of medicine is too much for one man to run). The one professor on the hospital staff who is really boss of his own whole department is the Professor of Pathology (one can say the same of many bacteriologists and some biochemists, but then this whole argument applies, mutatis mutandis, to them also). Now nearly every pathologist starts his career in a teaching department, and is well known in consequence to at least one chief. And every appointment in pathology has on its selection committee at least one professor of the subject, and though the local professor has only sometimes the appointment in his pocket he has at least a pretty strong veto in most cases. Every candidate is then either a protégé of his own, or of one of his twenty-odd fellows: and at least a good second-hand judgment is available in every case. That is not to say selection committees never err (he who would believe that has never been an unsuccessful candidate) but the close nexus of informed opinion makes the external evidence of degrees and the like less necessary than it is in less well-knit branches of the profession.

In fact, when you boil it down to its bones, we are governed more efficiently and ruthlessly than by an official College, even if almost unconsciously, by a junta consisting of nearly all our professors (we have remarkably few easy-chair men at the moment) with a few readers and some six or eight of the more active heads of non-teaching labs. It's all very undemocratic and irregular. And the Minister, who likes a Negotiating Body to negotiate with, may ultimately make us regularise the position. But for the present it works—works in fact rather well.

I began by setting forth to you, Barbara, our disgraceful state of anarchy with respect to exams and organisation and the like. I've examined for you some of the alternatives, and shown that our anarchy is an aristarchy and that we are little the worse in anything except self-conceit for lack of degrees. It is a prime function of the pathologist to recognise, more precisely than anyone else, the moment when normal hyperplasia goes beyond the limits of health. Isn't it just possible that our passion for postgraduate degrees and diplomas and all that they imply is becoming just a little . . . pathological?

Yours,
PETER DAVEY
F. R. Path. S. (God forbid!).

Medical Congresses

GASTROENTEROLOGY

THE fifth Pan-American Congress of Gastroenterology was held in Havana, Cuba, from Jan. 20 to 27. Delegates from the Latin American countries, U.S.A., Great Britain, and France joined members of the Cuban Society of Gastroenterology in discussing diseases of the liver and biliary tract, spleen, pancreas, and intestine.

Non-tropical Sprue

Dr. G. B. J. GLASS (U.S.A.) described the measurement of the hepatic uptake of radioactive vitamin B_{12} in the diagnosis of non-tropical sprue. The absorption and consequently the hepatic uptake of vitamin B_{12} may be defective in many conditions, but sprue is unique in that the hepatic uptake remains insignificant when intrinsic principle is administered simultaneously. A tracer dose of 0·5 μg. of CO^{60} B_{12} is given orally with 75–100 ml. filtered gastric juice. This is followed by a purgative after eight hours and an enema twenty-four hours later. Two days after the tracer dose evidence of radioactivity is sought over the abdomen and over the liver. There is no evidence of hepatic uptake of vitamin B_{12} in non-tropical sprue.

Dr. D. ADLERSBERG (U.S.A.) emphasised the value in idiopathic sprue of steroid-hormone therapy, and in particular of the latest of these hormones—prednisolone and prednisone. In 74 cases 15 mg. by mouth daily led to improved absorption of fats and vitamins, with a corresponding lessening of steatorrhœa. Unfortunately relapses invariably occurred one to six weeks after cessation of treatment, and other complications were ulceration and perforation of the intestine, silent bone fractures, and infection including pneumonia.

Excretion of Uropepsin

Dr. SEYMOUR J. GRAY (U.S.A.) described the dominant influence of the adrenal cortex on the stomach. Secretion of gastric pepsin is closely mirrored by urinary excretion of uropepsin, which can be measured by a simple colorimetric method. Changes in uropepsin excretion closely follow changes in ketosteroid excretion. In healthy people the uropepsin level rises after administration of corticotrophin or cortisone; increased excretion is not influenced by vagectomy. Similar increases follow the stress of pain, trauma, surgery, myocardial infarction, burns, or even emotion. Uropepsin levels are low in Addison's disease, and a rise to normal follows treatment with cortisone. Low levels are also found in myxœdema, pernicious anæmia, carcinoma of the stomach, and cirrhosis of the liver, and after gastrectomy. In contrast, uropepsin levels are high in patients with peptic ulcers. This quantitative test has therefore been employed in distinguishing benign from malignant gastric ulcers, and in differentiating the bleeding of œsophageal varices from that of peptic ulcers.

Serum-iron Levels with Jaundice

Dr. V. BEATO and Dr. M. ESCALONA (Cuba) have found the fasting serum-iron level of some help in distinguishing obstructive from hepatocellular jaundice. Compared with their normal values of 90–160 μg., the serum-iron level is often elevated in hepatitis, but is usually unchanged in obstructive jaundice and hepatic cirrhosis. They suggested that the test may be helpful in cholangiolitic hepatitis when other liver-function tests are negative.

Portal Cirrhosis

Dr. B. SEPÚLVEDA (Mexico) stressed the synergistic rôle of alcoholism and malnutrition in the ætiology of portal cirrhosis. In a series of 119 patients with this disease, alcohol or malnutrition alone was a contributory factor in 6% and 3% respectively; but combined they were significant factors in 83%.

Œsophageal Varices

Dr. R. YAZIGI (Chile) underlined the poor prognosis of the cirrhotic with intractable jaundice. His figures also revealed that in a series of over 600 patients with portal cirrhosis only 36% bled from proven œsophageal varices. Bleeding varices need expert management early to reduce the mortality of 40% cited by Dr. C. FLOOD (U.S.A.), who suggested that this high figure was due to severe hæmorrhage before the patient reached hospital, or alternatively to complicating hepatic coma. That hepatic coma is a significant factor was made clear by his much smaller mortality-rate of 17% for bleeding due to extrahepatic portal hypertension. In his hands management is based on early blood-transfusion and early balloon tamponnage to stem the bleeding. In contrast, Dr. R. R. LINTON (U.S.A.) advocated immediate ligation of the œsophageal varices. Of a small group of patients treated in

this way, 70% survived and then underwent an anastomotic procedure to reduce the portal hypertension. He favours hypotensive spinal anæsthesia during anastomotic surgery.

Portal Hypertension

Dr. A. L. DE ALMEIDA (Brazil) combined percutaneous splenoportal venography with intrasplenic manometry in assessing 97 patients with portal hypertension and in healthy subjects. Of the radiographic findings in portal hypertension, he stressed the tortuosity and dilatation of the portal vein, the presence of collateral channels, and the acuteness of the angle of the portal vein with the vertebral column. His measurements of the intrasplenic pressure have proved of practical importance in the diagnosis and management of portal hypertension.

Bilirubin

Dr. J. L. BOLLMAN (U.S.A.) used the technique of reverse-phase chromatography, evolved by Billing, Cole, and Lathe in England, for the identification of different bilirubins in hepatectomised dogs. As would be expected, he identified indirect bilirubin in the serum. In addition, however, he discovered a new pigment which passes into the urine. It reacts slowly in the van den Bergh reaction, although more quickly than indirect bilirubin, and it is soluble in chloroform. It is probably similar to pigment 1, which has been described in Great Britain.

Cirrhosis with Ascites

Dr. J. CAROLI (France) divided his ascitic cirrhotic patients into asthenic and sthenic groups. In both groups the majority of patients were alcoholics. Most of the asthenic patients were female, and usually they were jaundiced, anorexic, and depressed and had lost much weight. They responded badly to all forms of treatment, including diet and paracentesis abdominis. The sthenic group lost their ascites in three to four weeks with multiple small paracenteses of 2–3 litres three times weekly, while receiving a 350 mg. low-sodium diet, containing 3000 calories.

Secretin Test

Dr. D. A. DREILING (U.S.A.) reported the results of the secretin test in 1500 patients with pancreatic and biliary-tract disease. The result is abnormal in the presence of tumours of the head and body of the pancreas. Tumours of the tail of the pancreas and encroaching contiguous tumours do not affect the test. It is of no practical value in the diagnosis of acute pancreatitis, because it cannot be undertaken in the acutely ill patients, and it returns to normal quickly in convalescence. A false-positive secretin test may be obtained when the indwelling duodenal tube is displaced, so the site of this should be checked by fluoroscopy. False negative secretin tests are obtained when ulcerating growths permit diversion of pancreatic secretion into sites other than the duodenum.

Classification of Hepatic Cirrhosis

A special subcommittee, under the chairmanship of Dr. SHEILA SHERLOCK, recommended that hepatic cirrhosis should be defined anatomically and clinically. Essential anatomical features are as follows: (*a*) involvement of every part of the liver, but not necessarily every lobule; (*b*) cellular necrosis at some stage of the disease; (*c*) nodular parenchymal regeneration; (*d*) diffuse fibrosis; (*e*) disorganisation of the lobular architecture with connective-tissue bands uniting centrolobular zones with the portal tracts. Clinically the disease is chronic and may be accompanied by liver-cell failure and/or portal hypertension.

The classification of cirrhosis should be morphological, ætiological, and functional. Three morphological types suggested were portal, postnecrotic, and biliary; the biliary type was subdivided according to the presence or absence of obstruction of the extrahepatic biliary tract. The accepted ætiological factors are malnutrition, ethyl alcohol, viral hepatitis, extrahepatic biliary-tract obstruction, cardiac failure, hæmochromatosis, and rarely congenital syphilis.

The functional classification should include liver-cell failure and portal hypertension, if either or both are present, and also assessment of the activity of the disease, which indicates whether it is progressing, regressing, or stationary.

It was recommended that the following terms be abolished because they are useless or confusing: pseudo-cirrhosis, monolobular and perilobular cirrhosis, atrophic and hypertrophic cirrhosis, capsular cirrhosis, fatty cirrhosis, bronzed diabetes, pigmentary cirrhosis, parasitic cirrhosis, neoplastic cirrhosis, hypersplenomegalic cirrhosis, cirrhosis of the Banti and of the Fanconi syndrome, Hanot's cirrhosis, tuberculous cirrhosis, malarial cirrhosis, toxic cirrhosis, alcoholic cirrhosis, and posthepatitic cirrhosis. The committee excluded the last two terms, not because it disagreed that ethyl alcohol and viral hepatitis are ætiological factors, but to maintain their argument that cirrhosis should be first classified morphologically, and then ætiological and functional descriptions be added.

It was urged that all physicians should test this method of classification, to determine its practicability and possible pitfalls.

Medicine and the Law

"Found Neglected"

THE applicant was brought up in a poor-law institution. She was educated at ordinary schools and later employed in the institution but did not give satisfaction. Once she was 17, there was no power to detain her at the institution and it was feared she might leave. Therefore in June, 1948, she was removed to a mental institution under a "place of safety" order. On Dec. 9, 1948, a magistrate made an order under the Mental Deficiency Acts 1913 to 1927 that she be detained in a mental institution on the ground that as a feeble-minded person "found neglected" she was subject to the Acts. There was evidence before the magistrate that she was a borderline high-grade mental defective. After training she was allowed to live with her half-brother on licence. The applicant applied for a writ of habeas corpus on the ground that she had not been "found neglected" and therefore there was no power to make the detention order. The Court inquired whether there was evidence on which the magistrate could hold that the applicant was "found neglected," and the medical superintendent and the Board of Control argued that a mental defective who did not receive the special care and education which would be received in a mental institution was neglected within the meaning of the Act of 1913 and that, therefore, although the applicant was living in the poor-law institution she was "found neglected" in June, 1948. The Court reserved their judgment.

Mr. JUSTICE HILBERY, reading the first judgment, said that the Act of 1913 did not authorise the detention of all mental defectives however circumstanced. It applied to persons who in addition to being defectives were found neglected, abandoned, without visible means of support, or cruelly treated. The words "found neglected" meant found through neglect in some degree of distress; "neglected" connoted physical suffering from a lack of essentials through want of reasonable care, and the words could only apply to a condition which was in existence, not a future condition which it was apprehended would or might come about. In the Mental Deficiency Act 1927, Parliament had dealt with the situation of a mental defective whose need was training which could not be provided in his home, and the local authority could not act because a defective needed care and training, but only if the parent or guardian of the defective had made a representation to the authority. There was no evidence before the magistrate who made the order that the applicant was a mental defective "found neglected" and, therefore,

the powers given by the Act could not be exercised in respect of her; accordingly the Court had ordered her to be discharged.

Lord GODDARD, C.J., agreeing, said that it was important to stress the duty of the judicial authority in deciding whether the person brought before him was a mental defective. It was not enough that there should be two medical certificates; that they should have been given was a necessary preliminary to his having jurisdiction, but they were not conclusive in any shape or form. There had to be a judicial inquiry and the magistrate was obliged to see the person concerned. In many cases the appearance and demeanour of the patient, coupled with the certificates, would be enough, but his Lordship, could not believe that it would ever be sufficient for a patient who was described as a borderline high-grade mental defective: that there was room for a difference of opinion amongst experts was shown by the affidavits. It was for the magistrate to apply such tests and to call such evidence as he might require and it was important that he should not think that he was merely to act as a rubber stamp. In the present case the court could not say that there was no evidence to support the magistrate's finding as to mental deficiency, but his Lordship agreed that the finding that the applicant was found neglected within the meaning of the Act could not be supported. No doubt what was done was thought and intended to be for the benefit of the applicant, but persons of whatever age were not to be deprived of their liberty and confined in institutions merely because doctors and officials thought that it would be good for them.

Mr. JUSTICE DEVLIN agreed.

In re Rutty.—*Queen's Bench Division (Divisional Court)*: Lord Goddard, *C.J.*, Hilbery and Devlin *JJ.*, March 9, 1956. J. F. Platts-Mills (Robert K. George); Mrs. E. Underhill (Robert K. George); Rodger Winn (The Solicitor, Ministry of Health); V. G. Hines (W. J. Piper, Chelmsford).

C. J. ELLIS
Barrister-at-Law.

A Bequest and Two Claimants

A woman by her will, dated Aug. 11, 1953, gave her residuary estate to "the Imperial Cancer Research Fund care of the Christie Hospital and Holt Radium Institute Withington Manchester." She died in September, 1953; at the time of her death she was resident at Bournemouth, but before 1950 she had lived at Liverpool. The evidence was that her father had died at Liverpool of cancer, but there was no evidence that he had ever been treated for cancer at the Christie Hospital. The gift was claimed by both the Imperial Cancer Research Fund and the South Manchester hospital management committee which administers the Christie Hospital under the National Health Service.

Mr. JUSTICE VAISEY, giving judgment, said that this was rather an unfortunate case because there was no doubt that the deceased was anxious to promote cancer research. Nothing was further from his Lordship's thoughts than to confuse Liverpool and Manchester, but it was alleged that those living in Liverpool knew quite a good deal about what was happening in Manchester, and that might be some explanation of the reference to Manchester in the will.

Of the two claimants, the Christie Hospital had, at all material times, carried on cancer research and treatment; while the Fund was only concerned with research. It was a puzzle why the deceased had used the words "care of the Christie Hospital . . ." if she merely intended to benefit the Imperial Cancer Research Fund; it might be that those words possessed a significance which he was precluded from giving them. In the decision of the House of Lords in National Society for Prevention of Cruelty to Children *v.* Scottish National Society for Prevention of Cruelty to Children ([1915] A.C. 207) were a number of observations which applied precisely to the present case; Lord Loreburn had said there that the accurate use of a name in a will created a strong presumption against any rival who was not the possessor of the name mentioned in the will, which could not be overcome except in very exceptional circumstances. In that case, as here, the name given was the true name and the name by which the institution was described in its Royal Charter. His Lordship felt considerable doubt whether the deceased did not really contemplate cancer research at this particular place, but the words "care of" were not very helpful to the second claimant because they were used every day merely as part of an address. He thought that the gift to the "Imperial Cancer Research Fund care of the Christie Hospital . . . " was a gift to the research fund, although it was a curious way of doing it; a possible explanation was that the deceased gave that address because she felt sure that they would know where to send it. He had come to the conclusion that her residuary estate should go to the first claimant, the Imperial Cancer Research Fund, under the gift contained in her will.

In re Scanlon, Deceased. *Chancery Division*: Vaisey *J.* Feb. 14, 1956. Counsel and Solicitors: T. L. Dewhurst (Bell, Brodrick & Gray for Oscar H. Whittingham, Bournemouth); R. R. A. Walker (Wilde, Sapte & Co.); Raymond Walton (Sharpe Pritchard & Co. for P. W. H. Revington, Manchester).

IRENE MOSES
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Mental Defectives on Licence

The Board of Control are concerned about the number of patients who are kept on licence for long periods, and they have revised [1] the suggestions for the periodic review of these patients which they offered superintendents and hospital management committees in 1949. The board would normally expect that a patient should be discharged after a trial on licence for twelve months at most unless there are "overwhelming reasons to the contrary," and they ask that superintendents and H.M.C.s should review the circumstances of patients at the end of one year on licence with a view to discharge. Where it is not found possible to recommend discharge of a patient after eighteen months on licence, the board ask that a report giving the reasons should be sent to them. Reports for patients who by March 1, 1956, had already been on licence for eighteen months or more should be sent as soon as possible and not later than Sept. 30, 1956.

Special Articles

SCOTTISH STANDING ADVISORY COMMITTEES

THE Secretary of State for Scotland has appointed new members to the standing advisory committees to hold office until Dec. 31, 1958, and has reappointed other members whose terms of office have expired. Medical members have been appointed or reappointed as follows:

Medical Advisory Committee.—Dr. A. P. Meiklejohn (Edinburgh).

Dental Advisory Committee.—Dr. W. M. Gibson (Glasgow).

Nursing and Midwifery Advisory Committee.—Dr. N. I. Wattie (Glasgow).

Pharmaceutical Advisory Committee.—Dr. I. M. Macleod (Inverness).

Advisory Committee on Hospital and Specialist Services.—Dr. James Milne (Glasgow).

Advisory Committee on Local Authority Services.—Dr. Richard Scott (Edinburgh).

Advisory Committee on Health Services in the Highlands and Islands.—Dr. C. S. Sandeman (Durness).

1. H.M.(56)25.

In England Now

A Running Commentary by Peripatetic Correspondents

MY friend Ananias failed his finals so often that we thought he'd receive his M.B. posthumously. However, once qualified he prospered steadily. Yet at this year's reunion dinner he ate two helpings of everything, touched me for a fiver, and blamed it all on a Tibetan ape.

"My brother left it with me after his last leave. Height 5 ft. 6 in., colour of hair brown, so rare that the Zoo pundits had never heard of it, and eyes like two saucers of strong tea. I was loth to harbour it. Already, because I was of non-domesticated habit, the dramatis personæ of my household came and went rapidly; and I didn't feel that an ape around the place would retard the process. But I was wrong. Obispo, as I called him, was adored by my housekeeper, and she taught him to clean shoes and lay the table. In the evenings he used to sit and watch me drink gin, and I found him a very sympathetic audience.

"One night, when Bevan's Hard Bargains had really been after their pound of flesh, I had my feet up on the mantelpiece and was giving Obispo a soul-searing account of the day. It was the look of him, sitting there gravely in my chair, chewing my stethoscope, and listening with his enormous eyes like a psychiatric consultant, that gave me the idea. If he could listen to my woes, he could listen to those of my patients.

"I gave him my cram-course in medicine, and in three days he could feel a pulse and hold a pen; in five he could pretend to write, and in ten he was wearing horn-rimmed spectacles, a white coat, and a stethoscope, and taking his first surgery. He was terrific. There he sat, apparently taking notes and nodding his head solicitously. When the patient had to stop for breath, he'd gaze soulfully over his specs and loose off a sigh of sympathy that would have blown over a bus. I made up bottles of bromide and rang the changes on the colouring; for good value, I occasionally made one gently effervescent and sealed the cork with collodion, thus ensuring that the owner was clear of the premises before the explosion. The neighbourhood was awe-struck by these detonations, and decided that the Indian doctor's medicines were constructed of rare and costly 'Imalayan 'erbs.' We were really public benefactors, as everyone's neurotics assembled at our Wailing Wall.

"One day I decided Obispo had better get registered; so I cabled my brother, who sent a magnificent yakskin diploma in an obscure Tibetan dialect and four colours. It made Obispo M.D. Shangri-la, and entitled him to a salute of 21 jinghals and grazing-rights for 8 yaks on the front lawn of the Great Palace at Lhasa.

"By this time, the surgery routine was running like clockwork. We'd had a few snags, of course, such as Obispo's lack of inhibitions over scratching himself, and also a little tension concerning some bananas in a patient's shopping-basket. And the occasion when he drank a quart of surgical spirit and took the surgery hanging from the chandelier by his feet. However, my remarks about Yoga and the Mysterious East soon reassured the faint-hearted. More irritating to me was his trick of pointing out paragraphs in textbooks in such a way as to imply that I had made a misdiagnosis; and he took to leaving *Boyd's Pathology* about, kept open by a gin-bottle at the chapter on hepatic cirrhosis. But the real trouble came while I was on holiday. Before I went, he brought me a heap of documents to sign. I learned too late that among them had been a letter he'd typed to the executive council to say I was resigning and appointing him as my successor.

"Appeal to the executive council? My dear fellow—they've just made Obispo chairman."

* * *

When we bought our lovely old Devonshire cottage, covered in roses and creepers, I was indignant when my hard-headed lawyer brother said "all thatched houses are verminous." But I must admit that, at first, during the nervous hours of the night, I used to hear sounds like outsized burglars heavily armed with coshes, tramping about under the steep-pitched roof over my bedroom ceiling. These were exterminated by lumps of bread spread with poison and thrown up through a trapdoor, and they have never returned. Then after the first autumn frosts, myriads of little scampering footsteps could be heard up and down and along the alley-ways inside the old cob walls, in the larder, and even in the rooms. Poor dears, they met untimely deaths in traps, and now rats and mice are no more. Then I found miniature serpents climbing up the walls and even sometimes cosily tucked into blankets. I don't know what they are called and I don't need to know, because they too have disappeared.

The next plague was silver-fish, darting swiftly out of cupboards. These were more difficult to eradicate, but I seldom see one now. Spiders are, I am afraid, chronic, but then I rather like them; they seem to be part of the household. There are none of the fat Miss Muffet variety, but only those with a delicate air, and legs like a film star's eyelashes. Last of all are the tortoiseshell butterflies. They hibernate high up on the dark beams of the staircase, and during the winter just hang there with folded wings, motionless as mummies; but with the first warmth of spring, they will awake and fly in and out of the windows bringing sunshine with the beauty of their wings into every room.

* * *

If you must dislocate your shoulder, the thing is to do it in the presence of a surgeon and an anæsthetist. It happened in this fashion to me, albeit late at night and in a country village. The patient was promptly laid on a bed in the local doctor's house and given intravenous pethidine, nothing stronger being available. Traction was exerted and I heard the anæsthetist remark: "You'll have to put your foot in it, Charley," but this step proved unnecessary. With Kocher's method at the second shot there was an audible click and a sharp stab of pain, and the head of my humerus was back where it ought to be. The operation had been watched by august spectators—a principal medical officer from the Gold Coast Ministry of Health, and a member of the territory's medical disciplinary committee. Afterwards we all motored 30 miles to Korlebu, roused the surgeon's wife, and enjoyed five cups of her strongest tea.

* * *

The time has come when physicians should band together and defy the serious menace to their art which noisily fills our skies. It is virtually impossible now to use the stethoscope without the disturbing buzz of aircraft overhead. As one strains ecstatically for the rarest râle or the most musical of murmurs, one's senses are instantly shattered by the irreverent coughing and spluttering of these infernal engines. And the poignancy of the moment is the greater when one has just taken infinite pains and achieved infinite unpopularity in commandeering silence from the ceaseless chattering and sluice-clatter that pervade all hospital wards.

The solution clearly does not lie with peaceful approaches. I have waited impatiently for a lull before running from patient to patient with chest-piece poised aloft. I have closed windows, I have bought thick rubber tubing, I have wound cotton-wool round my ear-pieces and I have shaken my fist in the air—all to no avail. No sooner do I reach for my stethoscope when a distinct drone revives my frustration. And as I stand by helpless while opening snaps and bronchial breathing go undetected, the drone becomes a crescendo of deafening vibrations, enough to discomfort Laennec in his place of rest.

The problem is urgent, for if a solution is not found soon, we shall have to throw away our stethoscopes and carry mechanical phonograms instead. Even so, we shall have to learn how to decipher the graphic squiggles of aeroplanes from those produced within our patients' chests.

* * *

PRESCRIBERS' NOTES: I

Where are the Snows . . .?

Gold pencil, a tablet for writing, and then
They came as a Boon and a Blessing to men.
First the *Basis*, next *Adjuvant*, then the *Corrective*,
All inside the *Vehicle*—dog-cart or brougham?
And, just to ensure they were doubly effective,
Well wrapped in dog-Latin, you couldn't see through 'em.
To those who were not getting rapidly well a glance
At your Prescription was good as a tonic;
Whereas nowadays, in this Age of Inelegance,
Ordered by telephone, tab. SuperSonic
Is all you can hope for, except for the fact
That your doctor, like you, doesn't know how they act.

Letters to the Editor

DEFICIENCY OF ESSENTIAL FATTY ACIDS AND ATHEROSCLEROSIS, ETCETERA

SIR,—Scant attention seems to be paid by the medical profession and by food administrators to a very important change in the dietaries of the more civilised countries that has been occurring over recent decades with increasing intensity. I refer to a chronic relative deficiency of the polyethenoid essential fatty acids (E.F.A.). It is true that the matter was raised in your columns a year ago, but then no less a person than a professor of nutrition stated [1] that such deficiency rarely if ever occurs in man; Professor Yudkin, however, has the disadvantage of not having worked upon E.F.A. Our own experimental work, humble in scope, combined with a careful assessment of the literature, has led us to exactly the opposite conclusion. The causes of death that have increased most in recent years are lung cancer, coronary thrombosis, and leukæmia; I believe that in all three groups deficiency of E.F.A. may be important. Your readers with stereotyped minds should stop reading at this point.

The most important E.F.A. is the vitamin arachidonic acid with four double bonds, tetraenoic. This can be formed in the body from the dienoic linoleic acid, also a vitamin, but vitamin B_6 is needed for the conversion.[2] The body probably has some slight ability to synthesise E.F.A., and these unsaturated fatty acids are of course easily oxidised. Oleic acid, with one double bond, can readily be synthesised in the body and for convenience I shall include it below in the term "saturated fat." For a reason that is obscure, the requirement of male animals for E.F.A. is at least five times that of females.

Eighteen months ago Dr. V. Basnayake and I made the surprising discovery that in the rat, fed a diet entirely free of fats and of sterols but adequate in other respects, there was a large deposition in the epidermis of cholesterol (or, more accurately, of Liebermann-Burchard-positive sterols) and this was mainly esterified; after about 7 weeks of the deficient diet the esterified cholesterol was more than doubled. Alfin-Slater and others [3] had slightly earlier found accumulation of esterified cholesterol in the liver of rats on a fat-free diet, but their work had not then appeared in print; and two groups of workers [4 5] have shown that linoleic acid lowers serum-cholesterol in man. Obviously in our experiments the cholesterol was being synthesised in the body and its accumulation might have arisen for one of three reasons; these we discussed when we reported [6] our observations to the 2nd International Conference on Lipids in Ghent last July.

First, there is an enormous increase in permeability of the skin in E.F.A.-deficiency [6–8] and there is an increase in capillary fragility,[9] and therefore cholesterol might pass more readily from blood as has recently been supposed to occur in atherogenesis [10]; this we rejected because the great increase is in the epidermis and not in the dermis.

Secondly, the epidermis might be synthesising unusual amounts of esterified cholesterol; but liver synthesis is normal in E.F.A.-deficiency.[3]

Thirdly, the cholesterol might be esterified with unusual fatty acids and might therefore be less readily disposed of from tissues.

We obtained evidence that this is true. Cholesterol is normally esterified mainly with unsaturated fatty acids [11] and when—as in our experiments—these are extremely deficient in the body it is esterified with much more saturated fatty acids synthesised in the body from carbohydrate. Thereby, I believe, abnormal esters are produced which tend to be deposited in tissues. Such deposition would be enhanced by a diet relatively high in saturated fat or high in cholesterol (which increases the dietary requirement of E.F.A.[12]). A diet deficient in vitamin B_6 and relatively low in arachidonic acid would act similarly, and this I believe may be the reason for the occurrence of atherosclerosis in pyridoxine-deficient monkeys [13] and possibly for the occasional hypertension in pyridoxine-deficient rats, which however we have never observed—probably because we give such rats large amounts of E.F.A. Atherosclerosis might therefore be regarded as a chronic deficiency of the vitamin arachidonic acid, this deficiency occurring in the body under the following conditions: (1) on diets very low in E.F.A. and adequate in aliments, but such diets would be exceedingly unusual; (2) on diets high in cholesterol and fairly low in E.F.A.; (3) on diets high in saturated or unnatural fats and fairly low in E.F.A. where the fats would be acting as an antivitamin; and (4) on diets deficient in vitamin B_6 and fairly low in arachidonic acid. Are such diets encountered?

DEFICIENCY OF E.F.A.

For many years and particularly in recent years animal fats and more especially vegetable fats have become increasingly oxidised and deprived of E.F.A. before being eaten. Vegetable oils, in many cases rich in E.F.A., are hardened by hydrogenation: margarine and shortenings are produced by hydrogenation of cotton-seed and soybean oil, some peanut-oil, and certain other oils; during this hydrogenation much of the E.F.A. are destroyed and unnatural *trans* fatty acids are formed. Unnatural fatty acids are formed not only during hydrogenation but also during the practice of deep-frying. Whale-oil is sometimes added to margarine, and this, like other marine oils of plant and animal origin which contain a variety of highly unsaturated fatty acids, is deodorised and hardened by hydrogenation. Some people who consume high-fat diets, such as some Norwegians and also Eskimos [14] uncontaminated by so-called civilisation, fare well by taking marine foods. The extraction-rate of bread is important in this context. The unsaturated fatty acids occur in the germ—wheat-germ oil is an excellent source—and therefore only small amounts survive in 70%-extraction flour. Of this remnant part is destroyed (as indeed is part of that in 80%-extraction flour) by the use of the so-called "improvers." Those that are bleaching agents, such as agene and chlorine dioxide, are all powerful oxidising agents, and the other improvers are also oxidisers. As well as the chemical improvers, substances with surface-active properties are added in baking, such as glyceryl monostearate, stearyl tartrate, and polyoxyethylene stearate; nothing is known of the effect of these upon the metabolism of E.F.A. Vitamin B_6 is mainly present in high-extraction flour, which is an important dietary source. Therefore, the use of 70%-extraction flour tends to produce E.F.A.-deficiency partly by having a low content of E.F.A. and partly by having only about a third of the vitamin B_6 present in wholemeal flour, this vitamin being needed for the

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2. Witten, P. W., Holman, R. T. *Arch. Biochem.* 1952, **41**, 266.
3. Alfin-Slater, R. B., Aftergood, L., Wells, A. F., Deuel, H. J. jun. *Ibid*, 1954, **52**, 180.
4. Friskey, R. W., Michaels, G. D., Kinsell, L. W. *Circulation Res.* 1955, **12**, 492.
5. Bronte-Stewart, B., Eales, L., Antonis, A., Brock, J. F. *Lancet*, Jan. 14, 1956, p. 101.
6. Basnayake, V., Sinclair, H. M. Proceedings of the 2nd International Conference on Lipids, Ghent, 1955.
7. Sinclair, H. M. *Biochem. Soc. Symp.* 1952, **9**, 80.
8. Basnayake, V., Sinclair, H. M. *J. Physiol.* 1954, **126**, 55P.
9. Kramár, J., Levine, V. E. *J. Nutr.* 1953, **50**, 149.
10. Wang, C.-L., Schaefer, L. E., Adlersberg, D. *Circulation Res.* 1955, **3**, 293.
11. Kelsey, F. E., Longenecker, H. E. *J. biol. Chem.* 1941, **139**, 727.
12. Bromer, W. W., Day, H. G. *Chem. Engng. News*, 1953, **31**, 3964.
13. Rinehart, J. F., Greenberg, L. D. *Amer. J. Path.* 1949, **25**, 481.
14. Sinclair, H. M. *Proc. nutr. Soc.* 1953, **12**, 69.

conversion of linoleic to arachidonic acid. Further, vitamin E, which is a powerful antioxidant and therefore protects E.F.A., is largely removed from low-extraction flour and what remains is destroyed by the "improvers." The dietary intake of E.F.A. and of unnatural fats in this and other countries during the past years is at present being examined by Miss Dorothy Hollingsworth, Dr. J. N. Morris, and myself.

EFFECTS OF E.F.A.-DEFICIENCY

What are the consequences of deficiency of E.F.A. in man? We can only surmise by arguing from the effects of such deficiency in lower animals. First, deficiency would be likely to be at least five times commoner in males than in females. Secondly, we might expect deposition of cholesterol since cholesterol esterified with unusually saturated or with unnatural fatty acids is probably disposed of less readily; diets high in saturated or unnatural fats or cholesterol or deficient in vitamin B_6 would enhance this. Thirdly, E.F.A.-deficient animals are much more sensitive to noxious agents such as ultraviolet light (mild doses of which we found to produce complete necrosis of an irradiated paw [7]), to X-irradiation [15] including probably its carcinogenic action, and perhaps to chemical carcinogens.[16] In your columns Dr. Nyrop has argued [17] for E.F.A.-deficiency increasing the sensitivity, of males particularly, to a chemical carcinogen in tobacco-smoke and so contributing to bronchial carcinoma, and in general I endorse his views. Aortic atherosclerosis is unusually common in persons dying of bronchial carcinoma. Are there not other forms of cancer the incidence of which might be similarly increased? For instance, deaths from leukæmia have increased rapidly in the past two decades, are somewhat commoner in males than in females, show peaks of incidence (particularly in the case of lymphatic) in persons under 5 and over 45 years, are commoner in the U.S.A. and Denmark (a country with a highly developed medical service including radiography) than in England, are commoner in the rich than in the poor and (in the U.S.A.) in white than in coloured persons, and are nine times more frequent amongst U.S.A. radiologists than amongst other physicians.[18] If the more highly civilised and wealthier peoples are becoming increasingly sensitive to the carcinogenic effects of X rays through deficiency of E.F.A., the above facts become explicable provided those young children who died of leukæmia were irradiated when their pregnant mothers had diagnostic radiography; a chemical carcinogen could hardly be responsible for their deaths. But a chemical carcinogen in food, susceptibility to which has been increased by E.F.A.-deficiency, might account for the susceptibility of males in particular to carcinoma of the stomach.

EPITHELIUM AND NERVOUS SYSTEM

Seborrhœic eczema is a disease predominantly of males and appears to be increasing in incidence. It resembles histologically the lesion found in E.F.A.-deficient rats; some cases are alleged to respond to vitamin B_6 by inunction but not by injection, and inunction of an antagonist of vitamin B_6 produces dermatitis [19]; it is not impossible that this therapeutic effect is achieved by local conversion of linoleic to arachidonic acid, and that some cases of seborrhœic dermatitis are E.F.A.-deficiency. Similarly, the dermatitis that sometimes follows the local application of detergents may arise through these extracting E.F.A. from the skin. In lower animals, in which we have carefully studied the skin lesion of E.F.A.-deficiency [20] and found a dramatic increase in permeability of the epidermis,[7 8] we believe there is a structural fault perhaps through failure of phospholipids containing E.F.A. to polymerise and form the impermeable barrier in the stratum granulosum. Phospholipids are rich in unsaturated fatty acids (though not so rich as cholesteryl esters), and although we found them to be normal in amount in the epidermis of E.F.A.-deficient rats they were abnormal in composition since the epidermal content of dienes and tetraenes had been enormously lowered. In the E.F.A.-deficient dog [21] the iodine number of serum phospholipid fatty acids is lowered, as is that of serum cholesteryl ester fatty acids, whereas the iodine number of serum glyceride fatty acids is normal. So, as in the case of esterified cholesterol, we have an abnormal type of phospholipid being formed which may not only cause a structural defect in the skin which is responsible for the great increase in permeability but may also be outstandingly important for four reasons.

First, the nervous system is rich in phospholipids containing polythenoid fatty acids, and these are found together with highly unsaturated cholesteryl esters in myelin; the presence of abnormal types of the compounds that are known to be important to it would be unlikely to leave function undisturbed: disseminated sclerosis is a disease of highly civilised countries being almost unknown in India and China, and other diseases in which the ectodermal neuroglia is affected may be relevant; since serum-E.F.A. fall in acute infections, it is not impossible that postinfective encephalomyelitis should be considered in this context; early mild dementia appears to be becoming commoner in males.

Secondly, duodenal ulcers are increasing particularly in males, and in lower animals ulcers of the gut can be produced by feeding saturated fat.

Thirdly, the mitochondrial membrane probably contains phospholipids, and derangement of this through deficiency of E.F.A. might be responsible for the uncoupling of oxidative phosphorylation found in such deficiency.[22]

Fourthly, it is known that after a meal rich in fat the blood is more coagulable,[23] and recently it has been shown [24] that the substance concerned is almost certainly phosphatidyl ethanolamine.

CORONARY THROMBOSIS

Phospholipids are increased in the serum of persons with acute myocardial infarction, and if this compound contained unusually saturated or abnormal fatty acids, it would be expected to persist in serum for a longer time and might therefore be a factor in causing thrombosis, whether coronary or cerebral, in persons with atherosclerosis which I have concluded above may well be caused by cholesterol esterified with abnormal fatty acids. Eighteen months ago, when we had obtained some evidence of the production of abnormal compounds, I called attention [25] to the correlation in this country between the dietary intake of vegetable fat and deaths from coronary thrombosis: "I believe the answer may be that the level of total dietary fat is related to atheroma, but that the level of dietary *vegetable* fat is related to clotting upon atheromatous plaques, and hence to coronary thrombosis." In general it is the vegetable fats that are hardened and may give rise to abnormal phospholipids. But at that time we had been fortunate in having Dr. Ancel Keys recently to work with us and I had been impressed in general with his belief that total dietary fat, of whatever kind, was related to atheroma though we differed about its relation to coronary thrombosis and about Eskimos who have high dietary fat and allegedly little atheroma. Since then I have come to realise that Keys's hypothesis is not correct: what matters in

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18. Hewitt, D. *Brit. J. prev. soc. Med.* 1955, **9**, 81. March, H. C. *Amer. J. med. Sci.* 1950, **220**, 282.
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24. Robinson, D. S., Poole, J. C. F. *Quart. J. exp. Physiol.* 1956, **41**, 36.
25. Sinclair, H. M. *Advanc. Sci.* 1955, **12**, 115.

atheroma is, I believe, the amount and structure of the dietary fatty acids.

NEED FOR RESEARCH

You will now conclude, Sir, if indeed you have not done so long ago, that I have strayed into the realms of fantasy. You will remind me that long ago Sir Thomas Browne wrote: "Imagination is apt to rove, and conjecture to keep no bounds." My inclusion of "etcetera" in the title invites the scorn we so readily pour on vendors of patent cure-alls. I have no wares to sell. The experiments to test my hypotheses are simple to devise, and for eighteen months I have hoped to be able to perform them. But at that time when Dr. Basnayake and I observed as we think the deposition of an unusual cholesteryl ester and the formation of unusual phospholipids we were engaged upon the ninth move of our laboratory; he did the estimations in another department while I did plumbing and carpentry. Now we are engaged upon our tenth move which will be followed later by our eleventh. Nomadism is incompatible with experimental science. And all the time we note that these diseases of civilisation have increased, are increasing, and ought to be diminished—diseases which I believe are caused by a dietary high in saturated fats and unnatural fats, and relatively low linoleic and arachidonic acids so that abnormal esters of cholesterol and abnormal phospholipids are formed in the body. I have not in this letter been concerned with conditions I believe to be caused by a pure dietary deficiency of essential fatty acids, without any relative increase in saturated or unnatural fat: these I consider to include phrynoderma [25] and also vesical calculus so common in the Far East, the latter particularly affecting children under the age of 10 and being far more common in males than in females [26] (7 : 1, which is about the ratio of the requirement for E.F.A.). My purpose in sending you these speculations, which are supported by experimental evidence, is to try to help to prevent the devastating and usually increasing mortality in highly civilised countries from atherosclerosis and its sequelæ, from cancer of the lung and stomach, from leukæmia, from disseminated sclerosis, and possibly other diseases of civilisation. There is a particular urgency in that if any part of my thesis is right it would be unfortunate to adopt flour of a low extraction-rate for three reasons: first, the practice would reduce the dietary content of E.F.A. partly because flour of low extraction has most of these removed, much of the rest being destroyed by the so-called improvers; secondly, it would remove an important dietary source of vitamin B_6, this vitamin being needed to convert linoleic to arachidonic acid; thirdly, it would remove, in presence of "improvers," all the vitamin E which protects E.F.A., and indeed this protection might account for the unsubstantiated claims of Shute and others that administration of vitamin E is useful in certain of the conditions in which I suggest deficiency of E.F.A. is important. You, Sir, have consistently opposed any such retrograde step [27]; when Professor McCance and Dr. Widdowson on the basis of their short-term experiment upon children in Germany pronounced [28] that "general information and also scientific information had been wrong in laying so much emphasis on the value of high extraction [bread] for all persons under all conditions," you rightly concluded: "we maintain unrepentantly that, when it is a question of altering what has been a staple food for a very long time, the onus of proving advantage lies on those who wish to make the alteration not on those who oppose it." To revert to flour of a lower extraction-rate fortified with only three nutrients would I fear be likely to increase these diseases of civilisation in this country. And let us not rush into "fortifying" low-extraction flour with arachidonic acid until we are sure that this will not produce cataract or have other disadvantages. With no sympathy for long-haired naturalism, I humbly plead that we should give more thought and perform more research before extracting and "improving" wheat, manufacturing unnatural fats that then appear in margarine (which could otherwise be an excellent food), and before foisting upon the public sophisticated fodder which it unsuspectingly accepts. "Truth," wisely wrote Leonardo, "is the daughter of Time and not of Authority." But time is fast carrying away—unnecessarily—increasing numbers of the greatest persons. I am sure you, Sir, will agree that research upon the problems I have mentioned is worth while, particularly at a time when we are trying to determine correct policy regarding the desirable extraction-rate of flour.

CONCLUSIONS

In summary, my thesis is that the dietaries of the more highly civilised countries are becoming increasingly deficient in the essential polyethenoid fatty acids (the vitamin arachidonic acid which in presence of vitamin B_6 can be formed in the body from the vitamin linoleic acid) and increasingly rich in more saturated fatty acids and unnatural fatty acids which may act as antivitamins. This disastrous change arises partly from processes of manufacture such as the hardening of fats, and partly from the use of low-extraction flour "improved" with oxidising agents. Since the requirement of males for E.F.A. is much greater than that of females, the consequences are more serious in males. These consequences may include the following:

1. Cholesterol becomes esterified with abnormal or unusually saturated fatty acids, and these abnormal esters are less readily disposed of and so cause atheroma.

2. Phospholipids (such as phosphatidyl ethanolamine) contain abnormal or unusually saturated fatty acids, and these abnormal phospholipids, being less readily disposed of, are retained in plasma and increase the coagulability of blood thereby contributing to coronary and cerebral thrombosis.

3. The deficiency of normal phospholipids in the epidermis and gut makes these structures faulty, and this may contribute to the incidence of seborrhœic eczema and peptic ulcer.

4. The similar deficiency of normal phospholipids (or presence of abnormal phospholipids) in the nervous system causes defective structure including demyelination which may cause disseminated sclerosis and possibly mental disease.

5. Deficiency of polyethenoid fatty acids may increase susceptibility to noxious agents including the carcinogenic effect of X-irradiation and chemical carcinogens; the former, taken in conjunction with increased presentation of the carcinogen, may account for the increased incidence of leukæmia and the latter for the increased incidence of carcinoma of the bronchus and for the predominance of carcinoma of the stomach in males.

6. If further experimental work gives any support to these broad conclusions, steps should be taken to increase the dietary content of polyethenoid fatty acids, and perhaps to decrease the content of unnatural fatty acids; bread and flour of high extraction without added oxidising agents, and margarine and shortenings made with less hardening of fats, would be important factors in thus decreasing some very serious diseases of civilisation.

Oxford. H. M. SINCLAIR.

26. Ramalingaswami, V. Personal communication.
27. *Lancet*, 1955, ii, 235.
28. McCance, R. A., Widdowson, E. M. *Ibid*, p. 205.

PRODUCTION OF CODEINE

SIR,—Dr. Williams (March 17) is quite wrong in assuming that because 'Panadol' can be described as *p*-hydroxyacetanilide its properties are likely to be similar to those of acetanilide.

There is the same difference between benzene and phenol, but he does not buy 'National Phenol Mixture' for his car. One need go no further than p. 2 of Martindale to find that *n*-acetyl-*p*-aminophenol is but the active principle of acetanilide shorn of all the sinister implications that Dr. Williams fears.

Although we still use large quantities of aspirin in this practice, when gastric irritation or sensitivity appear, with their sinister implications, panadol becomes the drug of choice; and having used it now for two years we find it a satisfactory analgesic which is tolerated better than tab. codein. co. or aspirin, side-effects being negligible.

Hawick, Roxburghshire. R. R. HAMILTON.

DOMICILIARY CONSULTATION IN PSYCHIATRIC PRACTICE

SIR,—I was interested in Dr. Skottowe's letter (Jan. 14) and in Dr. Hopkins's reply.

If the universal overcrowding of mental hospitals is to be alleviated, some calculated risks must be taken in returning relatively stabilised schizophrenics to the outside world. But this will be of little use until the community has been trained to accept people with some degree of emotional handicap, as they now accept people with some degree of physical handicap.

In this country the Canadian Mental Health Association is doing a great deal to educate the public along these lines.

The association engages speakers, holds discussions, and encourages visits to the Provincial mental hospitals and clinics. A recent departure is the setting up, by the association, of a social club for patients in Regina. It is used by patients living in the city who have been either in one of the mental hospitals or in the Munroe Wing (a small psychiatric unit attached to the Regina General Hospital). Although the idea of the social club for discharged patients is far from new, this is, as far as I know, the first example of such a club being run by a voluntary organisation. This scheme receives considerable support and encouragement from the doctors working in the Provincial psychiatric service; but no doctor actually attends the centre, as it is felt that it would be undesirable for those using it to feel that this was merely an extension of the institution which they have just left. The centre is in the charge of a psychiatric social worker, who carries out counselling and, if necessary, suggests to a patient that he should again seek medical advice.

Munroe Wing,
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Regina, Saskatchewan, Canada. JOHN D. LUCY
Director.

STAPHYLOCOCCAL INFECTION AFTER CARDIAC SURGERY

SIR,—Reading your annotation of Feb. 11, I was struck by the fact that there is no mention of oral sepsis. Fleming and Seal [1] make only an indirect reference to dental *extractions* as an ætiological factor in streptococcal bacterial endocarditis, the state of the mouth not being mentioned in the cases described. Again in the full survey of wound infection in a thoracic surgery unit by Blowes et al.[2] the gums are not considered as a portal of entry.

Oral sepsis is no longer regarded as the cause of all the ills to which the body is heir, but it is generally agreed to be an important factor in bacterial endocarditis. The pioneer work of Okell and Elliott [3] and of Round et al.[4] provides experimental evidence of bacteræmia occurring *without operative interference* which has been confirmed but never refuted. Most patients with heart lesions and many patients awaiting a thoracic operation have periodontal disease, often in an advanced form. The organisms in the gum pockets of these patients may pass into the blood through the pumping action of chewing or grinding. The mouth flora will include *Streptococcus viridans* as well as staphylococci, both coagulase positive and negative, which are likely to bear some relation to the bacterial flora of the ward after some time in hospital. If a dental extraction can lead to infection of a diseased endocardium, surely dental bacteræmia can occasionally infect a valve damaged by tearing, the cardiac suture line, or the dead spaces which may occur in thoracic surgery.

1. Fleming, H. A., Seal, R.A.F. *Thorax*, 1955, **10**, 327.
2. Blowes, R., Mason, G. A., Wallace, K. R., Walton, M. *Lancet*, 1955, ii, 786.
3. Okell, C. C., Elliott, S. D. *Ibid*, 1935, ii, 869.
4. Round, H., Kirkpatrick, H. J. R., Halls, C. C. *Proc. R. Soc. Med.* 1936, **29**, 1553.

Fleming and Seal presume that the organisms gain entry at the time of operation. A study of the case-histories does not justify this presumption, normal convalescence being apparently abruptly disturbed. It is more reasonable to postulate that, the penicillin cover for the operation having ceased, severe bacteræmia develops when the patient begins to masticate more vigorously, the mouth being relatively unhygienic, as it is, despite nursing care, after all major operations.

There are ample possibilities of infection without implying that all are due to oral sepsis. My purpose is to draw attention to the mouth as a portal of entry. A great effort is being made to provide full dental treatment for patients in all hospitals, and it is important to appreciate that the dental service can do more than just ward off toothache. Efficient preoperative dental prophylaxis—that is, scaling and polishing, whether by dental surgeon or dental hygienist—can be an important factor in the prevention of postoperative complications.

London, W.1. B. W. FICKLING.

BILLROTH-I AND POLYA OPERATIONS

SIR,—I have read with interest the comments of Professor Goligher and his colleagues (Feb. 4) on the veteran contest of Billroth-I versus Polya operation.

I am sure they are right that, if there is trouble from leaking anastomoses, at least one way out of it is to compromise with living, undernourished, dumping, bile-vomiters, in the goodly proportions which a Polya procedure will provide, rather than to encourage mortality from leakage. Even then, it would appear that the duodenal closure must be carefully done or leaks abound. One wonders whether, when there are instances of separation of the anterior part of the anastomosis with leakage into the peritoneal cavity leading to disaster, there may not be an equal or greater number of separations on the lesser curve, or at the more difficult posterior part of the anastomosis (comparable to the formation of any penetrating posterior duodenal ulcer) with sealing and no leakage, but a resulting large gap between mucosal surfaces leading to subsequent ulceration.

I agree also that "it was surprising to find that the majority [of recurrent ulcers] were on the lesser curve of the stomach." More than 100 of my own Billroth-I series of two-third resections have been operated on for over three years, like their own series, but with, so far, no recurrent ulceration on the lesser curve. The recurrence-rate after the standard Billroth-I operation for duodenal ulcer does appear to be, in most surgeons' hands, on the high side (my own being 6%); but the 15% described by Goligher et al. seems exceptionally high. Capper and Welbourn [1] have done much to show that the rate of recurrence depends chiefly on the amount of stomach resected; and with the extra gap to be filled following resection of a duodenal ulcer and the necessary accompanying length of duodenum, there is a tendency to skimp the resection to avoid tension with resulting leakage at the anastomosis, even though with full mobilisation really high resection is feasible. It is always difficult when several surgeons are involved in a series to know exactly how much stomach each has resected. In my personal series I have found that my assistant at times recorded a resection less high than I have credited myself.

Radiographic examination in my own cases has shown distortions of the lesser curve; but these have all been the "puckering and distortions" which Goligher et al. mention, and twice I have even sought these lesser-curve "ulcers" at operation by direct inspection of the interior of the stomach, with disillusioning results. Increasing experience makes me feel that with the very best of radiologists the interpretation of the shadows of barium in the stomach and duodenum are often less accurate than the interpretation of the telescopic appearance of the planet Mars. It may be possible that some of the lesser-curve recurrences were really original concomitant gastric ulcers which possibly were not sought at the primary operation; for it appears that, as Goligher et al. did not inspect directly for the "ulcer" at the second operation, they may not have done so at the first operation either. A further analysis by Capper and Welbourn [2] of the results of many partial gastrectomies for ulcer by numerous surgeons

1. Capper, W. M., Welbourn, R. B. *Lancet*, 1954, ii, 193.
2. Capper, W. M., Welbourn, R. B. *Brit. J. Surg.* 1955, **43**, 24.

indicates that there is less postoperative trouble with the Billroth-I procedure, and I feel we should not condemn a cart-load of apples because of one dubious basketful.

If leakage is a worrying factor it may be worth trying my present régime of a resection of the duodenal ulcer with low partial gastrectomy of about a third, vagotomy, and Billroth-I anastomosis. This is giving promising results both in function and in freedom from recurrence. Of over 100 patients hitherto treated in this way 45 were operated on over two years ago. So far there have been no recurrent ulcers, and the functional results are my best to date. Though it is early days to consider recurrence-rate, this operation does not appear to produce regurgitation of bile, possibly because the low resection, and so greater residual stomach, does not open out the œsophago-gastric angle as do many high gastric resections. If one feels strongly that it is absolutely essential to anastomose the stomach remnant to jejunum, I am quite sure that the Roux-en-Y anastomosis of Schofield and Anderson [3] will almost certainly be followed by freedom from bile regurgitation. I have seen, at a demonstration by Mr. Schofield, 12 patients, who had vomited bile severely after Polya procedures, completely cured by this operation.

It would be a pity to retreat once more into a maze of afferent loops, to flounder again into bogs of bile, and then perhaps to sink into unwanted drowsiness and sleep, now that we are just fighting free from it all.

Oxford. G. E. MOLONEY.

ACUTE TUBULAR NECROSIS OF THE KIDNEY FOLLOWING ABORTION

SIR,—The article by Professor Bull and his co-workers (Jan. 28) raises interesting points, some of which I have discussed elsewhere.[4]

It is notable that in all 13 cases the abortion was induced. It may be inferred that no case following spontaneous abortion was seen. This is in keeping with the other recorded cases of a similar nature. Likewise, I found no case of significant renal failure in over 20,000 consecutive cases of abortion admitted to the three Dublin maternity hospitals. (Induced abortion is very rare in this city.) On these grounds I suggest that the syndrome might be more properly alluded to as "acute tubular necrosis of the kidney following induced abortion."

Of the patients treated by Professor Bull, 8 admitted to injecting a soapy solution into the uterus and 1 to the use of a vaginal douche, the nature of which was not stated. The method used to procure the abortion was not given in 3 cases. In only 1 case was an instrument used—and this by a trained nurse; the additional use of a douche, possibly 'Dettol,' seems likely here. The employment of soapy solutions is an impressive feature of the recorded cases of renal failure following abortion, so common indeed that the solutions must be suspected of being directly implicated in the renal damage. Professor Bull and his colleagues may be in a position to provide a control series where the abortions have been procured by instrumentation alone.

Abruptio placentæ is the obstetrical complication with which renal failure is most commonly associated. The placenta is formed about the end of the first trimester; hence classical examples of abruptio placentæ arise in the middle months of pregnancy.[4] This is an entirely different clinical syndrome. For this reason the use of the term "abortion" for termination of pregnancy before the period of viability is misleading. A clear distinction should be drawn between the termination of pregnancy before and after the formation of the placenta. This distinction, particularly in the present context, is far more important than the arbitrary period of viability, which has no scientific basis.

In all the fatal cases, and therefore presumably in all those where the patient survived, the renal lesion was tubular necrosis as distinct from cortical necrosis. This suggests that the lesion may be due to a toxic agent acting directly on the tubules, whereas in abruptio placentæ the renal damage is presumed to result from vasospasm. If this be so, the tubular lesion in cases of abortion may be always reversible, while steps taken for the relief of vasospasm may be expected to be ineffective.

In conclusion, I suggest that the renal failure following induced abortion is not related to intercurrent factors—e.g., shock—but is due to the direct toxic action of, usually, soap solutions. The syndrome may have no obstetrical basis, the pregnant uterus being merely the portal of entry for a toxic solution. It seems to be the soap, and not the abortion, that causes the renal damage.

Dublin. K. O'DRISCOLL.

A NEW WAY OF TREATING FLAT FEET IN CHILDREN

SIR,—Mr. Helfet's article under this title (Feb. 11) interests me greatly; but what Mr. Helfet describes is neither new nor a method of treating flat feet. The method of treatment was devised by Mr. Franklin Charlesworth,[1] the chiropodist at Hope Hospital, Salford, who has used it for so long that I cannot remember when he started it.

The patients that Mr. Helfet describes are not those with flat feet but with feet that are everted, valgus, or pronated.

As some of us in this country have been at pains to emphasise, to apply the term "flat" to these feet is completely erroneous. Many of these pronated feet have such a high arch that they are correctly described as pes cavus. The late Mr. C. Lambrinudi, Mr. T. T. Stamm, myself, and others have been emphasising that the problem is not that the feet go flat but that they topple over into eversion, and that in association with this eversion there is an interesting and rather complex movement at the subtaloid and midtarsal joints. This causes the inner border of the foot to become convex instead of straight or concave and makes the head of the talus sink a little. In other cases the foot topples over because there is inadequate support by the first metatarsal from atavism—i.e., shortness, looseness or instability, or a permanently elevated position (metatarsus primus elevatus). In all these conditions the lack of support in the forefoot causes the foot to roll over into eversion. Stamm [2] has also given a very vivid description of what he calls the "unscrewed" foot. In all these varieties it seems that the important defect of the foot is in the forefoot, and it just depends on the minute details of the defect whether the end-result is a pronated foot, hallux rigidus, or hallux valgus.

It has, I think, been amply demonstrated in recent years that correction of pronated feet, when necessary, is best effected by means of some apparatus which holds the heel upright and replaces the defective support of the forefoot. That is what Mr. Charlesworth's and Mr. Helfet's supports do. The methods evolved by Mr. Charlesworth are not expensive. Mr. Helfet's methods follow very much those of Mr. Charlesworth, and no doubt he will be interested to know, following his suggestion in the last sentence of his article, that whereas in the past the material used has been plastic-strengthened hessian we are about to embark on trials of resin-impregnated laminated glass-fibre.

I would finally appeal for this to be recognised. A very high proportion of children at and soon after the time they start to walk have what we describe as pronated feet and genu valgum. In the majority it is a passing phase which requires no treatment. In a small proportion these changes will persist. As we are at present unable to tell which child will cure itself and which will not, it is wise to treat each by some simple means. Moreover, this allays the anxiety of the parent, which is perhaps the most important aspect. It is not until the child has reached the age of 6–10 that a persistent deformity needs serious consideration. Treatment then may consist in some form of surgical alteration to the shoe, the provision of a suitable light semi-flexible arch support, or a heel seat such as Mr. Charlesworth and Mr. Helfet describe. If this is persisted in, the majority of children will be cured. A very small proportion will still have the deformity and operative treatment will be necessary; but even at the age of 10–12 a condition of flat feet, using the word "flat" to mean a flattened longitudinal

3. Schofield, J. E., Anderson, P. St. C. *Brit. med. J.* 1953, ii, 598.
4. O'Driscoll, K. *Irish J. med. Sci.* January, 1953, p. 40.

1. Charlesworth, F. Chiropodial Orthopædics. Edinburgh, 1951.
2. Stamm, T. T. *Med. Pr.* 1952, **227**, 589.

arch, is rarely found. The true congenital flat foot is easily diagnosed very early in life, and here the problem of treatment is entirely different.

It is my experience that unless we distinguish most carefully the deformity which is present and give it its correct descriptive title, we shall be tempted to give treatment which is incorrect, inadequate, and too complex.

Manchester, 3. W. SAYLE-CREER.

CHRONIC PAROXYSMAL HYPOGLYCÆMIA

SIR,—I should like to thank Mr. Altounyan for reporting (Feb. 11) the interesting history of a case of hypoglycæmia due to an islet-cell tumour of the pancreas, with symptoms for fifteen years prior to operation. It is a pity that a histological report was not available at the time of writing, but presumably the case was one of benign adenoma.

I should, however, like to take issue with the terminology used in the title of the paper.

The term "chronic paroxysmal hypoglycæmia" is nondescript; cases of this sort should be regarded as examples of "hyperinsulinism," as we have recently pointed out.[1] This will avoid unnecessary terms, and enable similar cases to be more easily categorised.

Further, Mr. Altounyan uses the subtitle "Whipple's syndrome." Whipple's disease (intestinal lipodystrophy) was described by *G. H.* Whipple in 1907.[2] Whipple's triad of criteria for the diagnosis of hyperinsulinism were propounded by *A. O.* Whipple in 1935.[3] If an eponym is to be employed, preference could be given to Wilder, who described the first case in 1927 [4]; Harris, who first used the term in 1924 [5]; or Campbell, who did early work on the symptoms of hypoglycæmia in 1922,[6] and was associated with the first successfully operated case in 1929.[7] With such a large field, it is I suggest, preferable to avoid an eponym. Most workers are content with the term hyperinsulinism.

Diabetic Department,
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London, S.E.5. H. D. BREIDAHL.

1. Breidahl, H. D., Priestley, J. T., Rynearson, E. H. *J. Amer. med. Ass.* 1956, **160**, 198.
2. Whipple, G. H. *Bull. Johns Hopk. Hosp.* 1907, **18**, 382.
3. Whipple, A. O. *Surgery*, 1944, **16**, 289.
4. Wilder, R. M., Allan, F. N., Power, M. H., Robertson, H. E. *J. Amer. med. Ass.* 1927, **89**, 348.
5. Harris, S. *Ibid*, 1924, **83**, 729.
6. Fletcher, H. A., Campbell, W. R. *J. metab. Res.* 1922, **2**, 637.
7. Howland, G., Campbell, W. R., Maltby, F. J., Robinson, W. L. *J. Amer. med. Ass.* 1929, **93**, 674.

MYXOMATOSIS

SIR,—Dr. Brailsford (Jan. 14) states: "The Ministry of Agriculture has unsuccessfully used extermination measures for fifty years, at very great cost in value of herds of cattle and flocks of poultry, to get rid of swine-fever, foot-and-mouth disease, and fowl-pest; but it has learnt little or nothing of cure of these conditions though smallpox, cholera, typhoid, plague, and tuberculosis have largely been eradicated without the aid of unprofitable destruction of this type."

The veterinary profession, when dealing with the food-producing animals, has two prime duties: (1) to stamp out any source of infection which may be transmitted to the human population; and (2) to increase the productivity of these animals in order that the nation's larder may be preserved. There are two methods at hand for prevention of disease: (*a*) vaccination; and (*b*) slaughter and the rigid isolation of the affected area. Most bacterial diseases are controlled by vaccination, but most virus diseases have to be controlled by slaughter because of the peculiar characteristics of many viruses existing in several strains and provoking only a short-lived immunity. It is true that we have learned little or nothing of the cure of our virus diseases; but then, has anyone? We cannot cure foot-and-mouth disease, swine-fever, or fowl-pest. I am sure Dr. Brailsford would agree that there is similarly no cure for the common cold, influenza, or poliomyelitis. We can and do protect against swine-fever by vaccination (there is no official slaughter policy against this disease) and we have eliminated foot-and-mouth disease as an enzoötic by slaughter. We have completely eliminated such diseases as glanders, cattle-plague, and rabies by slaughter, and are now eliminating tuberculosis from our cattle population.

It is to be hoped that members of the veterinary profession will never tolerate the slaughter of animals when control by vaccination is an alternative.

Liverpool. K. L. VAUGHAN.

GONADAL DYSGENESIS AND TESTICULAR TUMOURS

SIR,—The recent finding that nuclear sex can be easily determined by the examination of vaginal smears [1–3] has enabled us to investigate systematically cases of primary amenorrhœa. In the course of this work we have come across a patient with a quite unusual clinical picture [4]; to our surprise the cell nuclei in the vaginal smear were chromatin-negative.

A 27-year-old single woman consulted us on account of hirsutism. She had gross features and pronounced virilism. Investigation revealed a calcareous tumour in the minor pelvis, adrenal cortical dysfunction, and increased urinary excretion of 17-ketosteroids. At laparotomy, a solid, fist-size tumour at the site of the left gonad was removed together with the uterus, fallopian tubes, and right gonad. Histopathological examination disclosed that this gonad was rudimentary ("streak ovary"), and the tumour was a dysgerminoma. Postoperatively intensive X-ray treatment of the pelvis was started, and the patient is still well after two years. Ethanol extract of half the tumour mass contained no 17-ketosteroids and but little œstrogenic substance. After irradiation, and possibly as a consequence thereof, the 17-ketosteroid excretion level diminished.

Dysgerminoma is known to be endocrinologically inactive. We therefore assume that in this patient the virilism was caused by dysfunction of the adrenal cortex, similar to that in the adrenogenital syndrome. The fractionated 17-ketosteroid pattern was in full accordance with this assumption.

This case thus presents a striking syndrome, consisting in the combination of: (1) gonadal dysgenesis, proved by the rudimentary gonad and the male nuclear sex; (2) dysgerminoma; and (3) adrenal dysfunction.

The evaluation of recent developments in embryological endocrinology, and study of other cases recently reported, soon convinced us that this peculiar syndrome was not to be regarded as a purely fortuitous coincidence. Patients with so-called "ovarian" agenesis have been shown to be mostly male. It is assumed that in these patients the male gonad, its anlage, or an essential component, must have been destroyed by some obscure early intra-uterine lesion, resulting in completely female sexual development. Although dysgerminoma occurs mostly in normal women, attention has since long been focused on its association with gonadal anomaly and hypoplasia. Novak [5] points out that "dysgerminoma is the most common tumour of pseudohermaphrodites, as it is of males with cryptorchidism." Cryptorchidism also represents a distinct gonadal aberration, occurring in males. Concerning the accompanying adrenal dysfunction Novak [6] and Ber [7] have described cases with hirsutism and virilism, entirely comparable to ours, and dysgerminoma itself is generally believed not to be the source of androgens. It is tempting to assume that the early intra-uterine injury may damage, not only the sole gonadal anlage, but more or less the entire urogenital ridge. This could explain the most varied combined

1. Carpentier, P. J., Stolte, L. A. M., Visschers, G. P. *Lancet*, 1955, ii, 874.
2. Carpentier, P. J., Stolte, L. A. M., Visschers, G. P. *Ned. Tijdschr. Geneesk.* 1956, **100**, 154.
3. Carpentier, P. J., Stolte, L. A. M., Visschers, G. P. *J. clin. Endocrin.* (in the press).
4. Plate, W. P. *Acta Endocr., Copenhagen*, 1953, **14**, 227.
5. Novak, E. Gynecological and Obstetrical Pathology. Philadelphia and London, 1946; p. 342.
6. Novak, E., Gray, L. A. *Amer. J. Obstet. Gynec.* 1938, **35**, 925.
7. Ber, A. *Acta med. Scand.* 1949, **133**, 411.

morphological or functional aberrations in structures derived from this source: the gonad, the adrenal cortex, and the kidney. Of course, this hypothetical unitarian concept, though supported by several facts, must await further investigation and confirmation.

In 1952 Huddleston Slater [8] described an entirely comparable case in which the patient was later found to have male-type nuclei.[9]

The patient was of normal male habitus, had an empty scrotum, and had been submitted to repeated plastic operations for hypospadias. Laparotomy revealed a normally developed uterus and fallopian tubes and, at the site of the ovaries, bilateral tumours. The right tumour was diagnosed as a differentiated arrhenoblastoma (Pick's adenoma tubulare testiculare ovarii), the left as a dysgerminoma with a separate dermoid cyst. Hormonal findings suggested adrenal insufficiency.

Thus, in this case dysgerminoma was associated with another quite rare tumour, which may arise in ovary or in testis and is thus again associated with undoubted developmental anomaly of the gonads in a male. In males adenoma tubulare has been reported almost exclusively in cases of cryptorchidism or hermaphrodism. In females it is said to exert no virilising effect, but some doubt seems now justified as to whether this tumour is ever found in normal females.

Quite recently Greenblatt [10] described a patient (case 6) with feminine appearance and male skin sex, in whom a testis was removed that contained, amid non-tumorous areas of immature testicular tubules, nodules of adenoma tubulare. The gonadal structure in this case is of special interest, as it seems to represent a transition between the entirely neoplastic right gonad of the foregoing case, and the non-tumorous, immature, œstrogen-producing testes of the so-called "intersex males with purely feminine external genitalia."

These three cases thus present a logical sequence, extending clinically from almost completely male to almost completely female habitus, and histologically from complete aplasia through tumorous aberration to almost normal immature structure. These facts seem to suggest that early intra-uterine injury to the male fœtus may cause either complete destruction with aplasia, or variable damage with eventual tumour formation, or only functional disturbance with no gross morphological aberration of the testis.

Another rare tumour, described as common to ovary and testis, which, in the light of the foregoing, deserves our attention is primary chorionepithelioma of the gonad. The nuclear sex of patients with such a tumour should be carefully studied. This tumour, too, has been reported in conjunction with dysgerminoma, and like dysgerminoma it is often found in young patients.

We can now firmly conclude that some tumours, formerly termed ovarian, are in fact testicular. Some light is thus thrown on the curious identity of dysgerminoma and seminoma. Future studies should be directed to the question whether, taking nuclear sex as a dividing-line, histological difference may be found between tumours that were formerly thought to be identical. On the other hand the evidence points strongly to a close pathogenetic relationship between dysgerminoma and adenoma tubulare.

This seems to represent a new step towards the understanding of various morphological and functional sexual deviations. Male individuals in whom a female or pseudohermaphroditic sexual pattern has developed should be carefully investigated for dysontogenetic tumours.

P. J. CARPENTIER
L. A. M. STOLTE
G. P. VISSCHERS.

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8. Huddleston Slater, W. B. *Ned. Tijdschr. Geneesk.* 1953, **97**, 646.
9. Levij, I. S. *Ibid*, 1955, **99**, 1477.
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"L.E.-CELL" PHENOMENON IN CHRONIC HEPATITIS

SIR,—The article by Dr. Joske and Dr. King [1] in which they report finding L.E. cells in two patients with active chronic hepatitis contains a few points I should like to comment on.

To begin with, it is widely recognised that methods involving the coagulation of blood—such as in the Magath-Winkle [2] procedure adopted in this study—have greatly enhanced the sensitivity of the original L.E. test. Without going here into the reasons for this,[3–7] the question has already arisen whether such techniques should not be used, "because they are so sensitive that they defeat the value of the L.E. cell as an indicator of acute and subacute lupus erythematosus, or whether the method should be welcomed" as a more sensitive but still reliable diagnostic procedure.[5] Also, the need for quantitation of the intensity of the phenomenon has been repeatedly emphasised, and Haserick [9] has remarked that no "aspecific" case has been reported to date, with a strongly positive (++++) plasma-L.E. test. I can add, from my personal experience, that even the degree of homogenisation of the engulfed nuclei has a very great importance, and that greatly depolymerised inclusions after the customary incubation-time, with a marked "jump of coloration" [10] between phagocytosing and phagocytosed nuclear chromatin, clearly indicate a high concentration of the L.E. factor in the blood, and are almost invariably associated with active lupus. L.E.-like cells, "tartoid" cells, and genuine, but generally not plentiful and seldom totally depolymerised, L.E. cells—not to speak of simple nucleophagocytosis—are more frequently met with in non-lupus weakly positive tests, especially by the more sensitive (and often more traumatising) defibrination techniques. In our experience, nucleophagocytosis has been frequent in febrile Hodgkin's disease.

I have accordingly suggested [11] that always at least one defibrinated and one anticoagulant test should be done, the latter preferably both by the auto- and by the iso-techniques (viz., with the patient supplying both the reacting blood or marrow cells and the active plasma or serum factor, or only the latter, the buffy coat being furnished by another, if possible group-compatible, individual, or even by an animal such as the dog or the horse [hetero-test]). In the admittedly rare non-lupus positive tests, good photomicrographs clearly demonstrating at least a couple of typical L.E. cells would also be desirable, since so much information as to the reliability of the report may be gained by simply inspecting these cells. Proof of this may be found in the reported finding of L.E. cells in the ascitic fluids of cirrhotic patients by Leoni,[12] while nothing more than tart cells and the like are depicted in his original article.

Lastly, I agree with Dr. Joske and Dr. King that the L.E. phenomenon may be the end-product of an auto-immune mechanism resulting from true auto-sensitisation, or perhaps simply from antibody-like globulin synthesis with an excessive and disordered immuno-allergic background. In fact, I considered this working hypothesis in 1951 [13] and submitted it more fully in 1952,[14] 1953,[15 16] and 1955.[7 17] This immuno-allergic reaction would seem to develop spontaneously (though it is often precipitated by drugs, stress, or infections), and to be self-perpetuating in genuine

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2. Magath, T. B., Winkle, V. *Amer. J. clin. Path.* 1952, **22**, 586.
3. Zimmer, F. E., Hargraves, M. M. *Proc. Mayo Clin.* 1952, **27**, 424.
4. Hargraves, M. M. *Adv. intern. Med.* 1954, **6**, 133.
5. Lee, L. S., Schwartz, L. I., Pariser, S. *Blood*, 1954, **9**, 965.
6. Snapper, I., Nathan, D. J. *Ibid*, 1955, **10**, 718.
7. Marmont, A. *Acta hæmat.* 1955, **13**, 257.
8. Sulzberger, M. B., Baehr, R. L. *Yearb. Derm. Syph.* 1953–54, p. 247.
9. Haserick, J. R. *In* Modern Trends in Dermatology. Edited by R. M. B. MacKenna. London, 1952; p. 76.
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12. Leoni, A. *Min. Med., Torino*, 1953, **55**, 1022.
13. Marmont, A. Le cosiddette angiomesenchimopatie reattive diffuse. Rome, 1951.
14. Marmont, A. *Schweiz. med. Wschr.* 1952, **82**, 1111.
15. Marmont, A. *Min. Med., Torino*, 1953, **44**, 80.
16. Marmont, A. Eighth Congress of Dermatology and Syphilology, Nancy, 1953; vol. 2, p. 53.
17. Marmont, A. *In* Attualità in Ematologia. Edited by A. Baserga. Rome, 1955; p. 187.

systemic lupus erythematosus; or in a symptomatic and self-limited fashion, as in certain cases of drug allergy, among which the lupus-like syndrome arising in some hydralazine hyperreactors is notable.[18] One is led to wonder whether a similar chain of events might take place also in selected "hyperergic" (joint pains!) cases of viral hepatitis but, to prove this, further investigations are needed. In our own control material which has been collected for more than five years, nothing more than occasional nucleophagocytosis has been observed, whether in chronic or acute hepatitis, both by the anticoagulant and defibrinated techniques.

Clinica Medica dell'Università, Genova, Italy. ALBERTO M. MARMONT.

VANISHING LUNGS

SIR,—Your editorial,[19] which gave a very concise yet informative account of this fascinating subject, referred to a recent article[20] by one of us. May we indicate some aspects which have so far not been adequately considered?

You emphasised the practical problem of abnormal air-spaces appearing in areas of tuberculous processes healed under the influence of chemotherapy. These have raised the difficult question of "open" healing of tuberculous cavities, which in turn has led to the current dispute over resection versus conservative management of such residual lesions. Here the work of Medlar[21] must be carefully considered.

The concept of "open" healing of tuberculous cavities has not been borne out in Medlar's extensive and very careful histological studies. In true tuberculous cavities Medlar could find no evidence of "open" healing, and he considers that in such cavities the potentiality for recrudescence remains persistently high. In a large number of resected specimens showing openly healed cavities Medlar found what he judged were abnormal air-spaces of non-tuberculous origin. These he prefers to designate "developmental bronchiectasis." From his findings he is convinced that these pre-existed in the area adjacent to healed tuberculous lesions, where their presence is purely coincidental.

We are now detecting the "vanishing lung" phenomenon increasingly often; and this remarkable increase, associated with many different pulmonary conditions, cannot be explained by Medlar's interpretation. It is hardly conceivable that in so many cases pre-existing developmental anomalies could merely by chance be associated with lung areas affected by various other pathologic conditions.

The concept of "developmental lung defects" was described by us[22] long before Medlar reported his studies. We regard his findings as conclusive confirmation of our concept of the rôle of "acquired lung defects" in the pathogenesis of observed abnormal air-spaces of the lungs. We believe that such defects are due to disturbance of the visceral function of the lungs[23] caused by damage to the lung parenchyma in many different disorders. These are quite like the "developmental defects" produced by pathological changes in the lungs during the postnatal period of development or during the period of the involution in advanced age. The "vanishing lungs" phenomenon, observed in the whole gamut of pulmonary diseases,[24] is reasonably explained by our concept of "lung defects" of developmental, acquired, and involutional origin.

The practical problem of clinical management of abnormal air-spaces is obviously far more complex. No clinical criteria exist by which we can definitely ascertain the nature of abnormal air-spaces in any given instance. In cases of pulmonary tuberculosis the sputum is usually negative as a result of prolonged chemotherapy. It is certainly not possible to distinguish radiographically between thin-walled tuberculous cavities and abnormal air-spaces of non-tuberculous origin. As we have indicated, in these cases even the histological features are subject to different interpretations. Those who oppose resection may now find support from Medlar's interpretation. Assuming the presence of developmental anomalies which have long pre-existed, they are justified in treating such residues expectantly, and rely on long-term chemotherapy to take care of the tuberculous foci. We advocate resection because in our experience when "lung defects" become clinically manifest it is usually because of progressive distension due to complicating obstructions[24] which are apt to give trouble later. With Medlar we believe that recrudescence of true tuberculous cavities is common even after prolonged chemotherapy.

In some instances obstruction by unsuspected early bronchogenic cancer has been revealed by resection of such abnormal air-spaces. Accordingly we feel that the patient is better rid of areas of "vanishing lung" sooner rather than later.

New York. ISRAEL RAPPAPORT
EDGAR MAYER.

RUPTURED UMBILICAL HERNIA

SIR,—I was much interested in Dr. de Glanville's article (Dec. 24) because I had a case of spontaneous rupture in an infant, which has been reported elsewhere.[25]

The condition is rare but not quite so rare as Dr. de Glanville suggests. 5 cases were reported in this country between 1868 and 1900,[26–30] 3 of these being described in your columns. Johnson[31] in describing a case listed 17 others that had been reported, including the 5 from this country already mentioned. Further cases have been reported by Turco[32] and Stein and Straus.[33] This brings the total to 29, including Mr. G. E. Parker's case[34] and Dr. de Glanville's 2 cases. Of these, 3 have been in infants, 2 in children, and the remainder in adults. But rupture in adults, following ulceration of the coverings, has probably been much commoner than these figures would indicate.

Whittington Hospital, London, N.19. S. L. STRANGE.

MEDIASTINAL SURGICAL EMPHYSEMA

SIR,—Following Mr. O'Donoghue's account (Jan. 28) of surgical emphysema due to a perforated duodenal ulcer, the following case-report may be of interest.

A man, aged 37, was admitted with the typical history and signs of a perforated peptic ulcer of two-and-a-half hours' duration. At operation a small anterior duodenal perforation with only moderate surrounding induration was found; there was little peritoneal soiling. The perforation was closed with an omental plug. Postoperative progress was satisfactory until the third day, when lower abdominal distension began to develop. Since this was thought to be colonic a flatus tube was passed, and then a turpentine enema given, but without relief. Oral fluids were discontinued and hourly gastric suction and intravenous therapy re-commenced. The abdomen became more distended over the next two days, and on the fifth day it was noted that the patient had surgical emphysema of the abdominal wall which had spread through the mediastinum to the root of the neck. Radiography confirmed the presence of mediastinal emphysema and showed free gas in the peritoneal cavity; there was no evidence of pneumothorax.

It was decided to drain the peritoneal cavity under local anæsthesia, and some gas and fluid were evacuated through a suprapubic stab. No improvement resulted, and the patient's general condition continued to deteriorate. He went into severe peripheral circulatory failure and died on the sixth postoperative day.

Necropsy showed that the perforation had given way completely and there was now a hole about 1/2 in. in diameter

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25. Strange, S. L. *Postgrad. med. J.* 1956, **32**, 39.
26. Leonard, C. *Brit. med. J.* 1868, i, 29.
27. Keetley, *Lancet*, 1884, ii, 276.
28. Pilkington, H. *Ibid*, 1890, i, 1008.
29. Lawson, G. *Ibid*, 1890, ii, 560.
30. Hemsted, H. *Brit. med. J.* 1900, ii, 1640.
31. Johnson, J. T. *Trans. sth. surg. gynec. Ass., Nashville, Tenn.* 1902, **14**, 257.
32. Turco, A. *Boll. Soc. piemont. Chir.* 1937, **7**, 412.
33. Stein, L. F. jun., Straus, F. H. *Illinois med. J.* 1951, **99**, 147.
34. *Lancet*, Jan. 14, 1956, p. 107.

in the duodenum. Gas under pressure, free fluid, and pus were present in the peritoneal cavity, and the presence of surgical emphysema in the mediastinum was confirmed. A careful search was made for the route of escape of the gas, but no completely conclusive evidence was discovered. There was a tiny tear in the attachment of the right coronary ligament to the diaphragm, though it was impossible to be quite sure that this was not a result of post-mortem manipulation. There did seem to be a concentration of gas-bubbles along the inferior vena cava. It must be presumed that the gas had in some way reached the retroperitoneal tissues through a small tear, and then tracked up along the vena cava.

The source of the intraperitoneal gas remains unknown. It could have been swallowed—which seems unlikely in view of the considerable intraperitoneal tension. It could have arisen by bacterial action in the peritoneal exudate—but no gas-forming organisms were cultured. Or it could have escaped from the bowel, the rising pressure in the lumen having possibly contributed to the breakdown of the perforation.

My thanks are due to Mr. H. A. Haxton for permission to publish this account.

Crumpsall Hospital, Manchester. P. B. LACY.

INGUINAL HERNIORRHAPHY

SIR,—May I examine Mr. Haxton's exposure (Feb. 11) of the "fallacy" contained in my article? He states that my argument is undone by a failure to note that the linea alba is elastic in its length.

Although I do not believe it, I propose to accept Mr. Haxton's suggestion for the sake of argument. The argument is that if the linea alba is elastic the whole of the lower third of the abdominal wall can descend, thus collapsing the "arch" of the conjoined tendon on to the inguinal ligament. Elasticity, however, is a passive quality needing the action of a dynamic force to demonstrate it. In this case the muscles provide the dynamic force. To achieve the desired effect a muscular mechanism for stretching the linea alba longitudinally in its lower half is needed; but I cannot invent such a mechanism. The lower half of the rectus abdominis, the most hopeful mechanism, fails because although stretching from the pubis to the lowest intersection, at the umbilicus, its pull is balanced by the upper half of that muscle, which, as far as I know, is not relaxed synergistically. In the upright position, therefore, the elasticity of the linea alba would be unused, as I am unaware of any evidence showing that the lower half of the rectus abdominis can overpower the upper half.

Let us assume, however, that the lower half of the rectus abdominis can overpower the upper half and stretch the linea alba downwards from the umbilicus, the active stretch occurring between the umbilicus and the xiphoid. This action is opposed by the contraction of those fibres of the internal oblique arising from the anterior superior spine and running horizontally to be inserted into the linea alba—unless it is suggested that they are synergistically inhibited. If these internal-oblique fibres contract they will tend, as they become taut, to fix the point on the linea alba into which they are inserted, in both the coronal and the sagittal planes. Whether they are powerful enough to balance the rectus abdominis I do not know, but they would embarrass its action. The only muscle that could act without this embarrassment is the pyramidalis—a puny fellow. Therefore, even though the linea alba could be stretched very easily, it would avail the "arch" of the conjoined tendon little or nothing. As far as I know the pull of the external oblique and the internal oblique, above the level of the anterior superior spines, balance each other, and, therefore, can be discounted.

The last possibility of utilising the hypothetical elasticity of the linea alba is to return to Keith's original concept—that as the muscle-fibres in the "arch" contract, it must approximate in length and position to the inguinal ligament. From observation I can state that the power of these "arch" fibres is so poor that they are unable to act in the way needed, even when stimulated alone, with the rest of the abdominal muscles relaxed.

Although the linea alba stretches with pregnancy it scarcely "twangs" back to "normal" with parturition, and I am sure that if Mr. Haxton repeats my simple experiments he will find my observations substantially correct.

Tutnall, near Bromsgrove, Worcs. F. S. A. DORAN.

MEMORIAL TO SIR HUGH CAIRNS

SIR,—The Society of British Neurological Surgeons has decided to commemorate the name and work of the late Sir Hugh Cairns. The memorial will take the form, in part, of a lecture to be given in London or Oxford from time to time by eminent men whatever their country. For this it is necessary to provide an endowment fund to cover an honorarium and travelling expenses.

Our society, knowing the high esteem in which Sir Hugh Cairns was held by people in many walks of life, believe that these might wish to show their respect and, where appropriate, their gratitude by subscribing to this object. The magnificent work done by Sir Hugh in organising, with the warm coöperation of the Army authorities, the special neurosurgical skills to be applied immediately behind the battle marked a lasting advance, we venture to believe, in military surgery.

Subscriptions should be sent to the hon. treasurer of our society, Mr. J. B. Pennybacker, the Radcliffe Infirmary, Oxford.

GEOFFREY JEFFERSON
President.

D. W. C. NORTHFIELD
Hon. secretary.

J. B. PENNYBACKER
Hon. treasurer.

Parliament

QUESTION TIME

Unemployed Doctors

Replying to a question, Mr. JOHN BOYD-CARPENTER, the Minister of Pensions and National Insurance, said that on March 19 there were 35 doctors registered at appointments offices in receipt of unemployment benefit.

Lung Cancer and Smoking

Mr. W. D. CHAPMAN asked the Minister of Health what action he had now decided to take, following the reports of his advisory committees, to inform the public about the dangers of lung cancer from smoking.—Mr. R. H. TURTON replied: I have this very important subject under urgent review. Mr. CHAPMAN: Will the Minister try to tell us how quickly he can make up his mind on this very important issue and try to give us a date? Will he also take note of the feeling which exists that there should be a national campaign and that the matter should not be left to small bodies and local authorities but should be officially sponsored by his Ministry? Will he make a note of the fact that he should try to emphasise in propaganda that one of the things which people can best do to help themselves is to give up smoking in the dangerous years between 40 and 50 when they become more susceptible to the disease?—Mr. TURTON: I am studying the very points which the hon. Member has mentioned.

Dr. BARNETT STROSS: Has the Minister yet consulted the Minister of Education to ensure that the facts are taught throughout all schools, and not only to boys but to girls as well? Will he bear in mind that this might well be the most fruitful field if the facts as we have received them are correct? Mr. TURTON: The first step is to find out exactly what the facts are at present as regards research.

Overtime for Nursing Staffs

Mr. ARTHUR BLENKINSOP asked the Minister what representations had been received from regional hospital boards regarding extra payments for overtime for staffs in mental and mental-deficiency hospitals.—Mr. TURTON replied: Two regional boards have expressed concern at the failure to reach agreement on overtime rates for nursing staff. Mr. BLENKINSOP: Does the Minister not agree that in view of the expressed willingness of the regional hospital boards to make some extra payments for this purpose, it is vital that the procedure of the Whitley Council should be speeded up?—Mr. TURTON: I understand that the claim for enhanced overtime rates has been rejected by the management side of the Whitley Council.

Obituary

JOHN ALEXANDER SINTON

V.C., O.B.E., M.D., D.Sc. Belf., F.R.S., D.L.

Brigadier Sinton, who died on March 25, was the first man to gain both the Victoria Cross and the fellowship of the Royal Society. The first of these distinctions was awarded in 1916 for his personal qualities, and the second in 1946 for his scientific attainments.

He was born in British Columbia in 1884 of Ulster parents, but he was educated at Belfast. In 1908 he graduated M.B. with first-class honours at Queen's University, and he held appointments in the pathology department there and at the Liverpool School of Tropical Medicine. As he did not join the Indian Medical Service until 1911, his age at entry was above average and his opportunities for appointment to the highest ranks were correspondingly reduced. In his earlier years in India he was medical officer to the 31st Bengal Lancers, where he was enormously popular with all ranks and their families. Soon after the outbreak of war in 1914 he saw active service in Mesopotamia and he was four times mentioned in despatches before the engagement in 1916 in which he was awarded the V.C. for "outstanding courage and devotion to duty." He was invalided to India in 1916 and served on the North-West Frontier until 1921; for his work there he was appointed O.B.E. and again mentioned in despatches. A third of his working life was thus spent on active military duty in war.

In 1921 he began in earnest his career in medical research when he was seconded to the Indian Research Fund Association to take charge of a special inquiry into the treatment of malaria. Later, a malaria treatment centre was started at Kasauli, Punjab. The experiments carried out there under his direction placed the therapy of malaria, and particularly the evaluation of antimalarial drugs, on a new and rational basis. One of the most important results of this work was the recognition of the value of pamaquin in the prevention of relapse in *vivax* malaria. He was not, however, wholly preoccupied with his studies on the treatment of malaria and he also took charge of the Central Malaria Bureau and later the entomological section of the Central Research Institute, Kasauli.

In 1927 a separate malaria research organisation was set up in India and Sinton became first director of the Malaria Survey of India. He gathered round him a team of outstanding workers and was their undoubted leader and inspiration until he retired in 1936. The headquarters of the survey was in Kasauli, in which pleasant hill-station the British Army had its Malaria Treatment Centre, where cases of persistently relapsing malaria (almost exclusively *vivax* infections) were sent. Sinton worked in close collaboration with the staff of this unit and A.H.Q. in devising carefully controlled trials of different courses of treatment which it was hoped might effect radical cure. Many unsuccessful attempts had been made with quinine in different combinations and dosages, but when plasmoquine was investigated it soon became evident that this drug possessed the unique property, hitherto unsuspected even by the makers, of destroying the phase of *Plasmodium vivax* which survives between relapses. A series of trials led to the evolution of courses of treatment with combined quinine and plasmoquine, or, later, atebrin and plasmoquine, which were adopted by the Army in India and reduced relapsing malaria to negligible figures. This had an ironic if somewhat obvious sequel. For lack of suitable cases, the Malaria Treatment Centre had to close, and no further controlled experiments in the chemotherapy of malaria could be carried out in these favourable surroundings. In all this work Sinton played a leading part. His shrewd brain was quick to grasp the significance of the results of plasmoquine treatment, and to press home the necessity of finding out by controlled trials the best way of using it. Strangely enough the conclusions of the Kasauli group did not find favour in the eyes of the malaria subcommittee of the Health Organisation of the League of Nations, and plasmoquine was not widely used except in India—where it was adopted as the standard treatment—and indeed did not attract much attention until the work was repeated and the results confirmed by United States investigators during the late war.

Sinton had wide knowledge and experience of all aspects of the prevention of malaria, and organised many control schemes throughout India. He was an able entomologist, and added much to our knowledge of the mosquitoes and also of the sandflies of India. During these years he published over 200 scientific papers, many of them in the *Records of the Malaria Survey of India*, a journal which he himself founded in 1929 to provide an outlet for the work of his own organisation. It soon became a journal which accepted work on malaria from all over India and beyond, and under his editorship the journal (now the *Indian Journal of Malariology*) quickly won international fame.

After he retired from the Indian Medical Service in 1938 he was appointed Manson fellow of the London School of Hygiene and Tropical Medicine and adviser on malaria to the Ministry of Health. But on the outbreak of war the following year he was recalled to India and posted as quartermaster to a military hospital in India, a post which, reputedly, he held with outstanding success. He was demobilised in 1940 on reaching the age of 55. Soon afterwards he was recalled from retirement and appointed consultant malariologist to the East African Forces and later to the Middle East Forces, where his duties were exacting. The potential danger of a malaria outbreak in certain areas was great, and detailed organisation was necessary to have everything in readiness. As all supplies had to come round the Cape, and 6–9 months elapsed between the placing of an order and the receipt of the goods, careful advance planning was necessary. Into this Sinton threw himself with characteristic energy, and the insignificant incidence of malaria in this Force was, in no small measure, due to his expert guidance. He was retired for the second time in 1944, but after serious outbreaks of malaria among our troops in Sicily and Italy he was again recalled and appointed consultant malariologist to the War Office.

After his final retirement in 1945 Sinton went to live on a small isolated estate in Northern Ireland and cut himself off completely from his previous activities. Instead he began to take part in public affairs, especially in those of Queen's University, of which he became a pro-chancellor. He was also high sheriff of the county of Tyrone and a member of the National Arbitration Tribunal. He received many academic distinctions, including honorary degrees, the Chalmers medal, the Mary Kingsley medal, and, ten days before his death, the Manson medal.

To the man who had this varied and distinguished career two of his friends have paid tribute. H. W. M. writes:

"Sinton had an exceptionally quick intellect and a flair for getting to the heart of any problem. He was a man of the highest integrity and of great physical and moral courage. He always did what he felt to be right no matter how unpopular his actions might prove to be: he loathed expediency. These characteristics and his uncompromising attitude sometimes brought him into conflict with higher authority, and this may help to explain the paucity of official recognition of the great work which he did. On the other hand, no-one could have been kinder or more understanding and considerate to his older and younger colleagues, and all who worked with him had the greatest respect and affection for him. He would take endless trouble to help others, and on many occasions he abandoned his own research work for days or even weeks on end to obtain information requested from him."

J. S. K. B. recalls him as tall, spare, active, with unflagging energy.

"Sinton (he continues) threw himself with enthusiasm into whatever work he had in hand, and did not waver until it was completed. He was forthright and outspoken, and did not suffer fools gladly. He loved argument, and his eyes shone with the light of battle. He was indeed a formidable adversary, particularly as he was almost invariably right. But he was the kindest and most generous of souls, whose mind never entertained a mean thought, and whose gospel

in life was to give ungrudgingly of his best: a loyal friend, in whose company one could never be dull."

Brigadier Sinton is survived by his widow and their only child, who is the wife of a medical research-worker in West Africa.

FREDERICK JAMES FITZMAURICE BARRINGTON

M.S. Lond., F.R.C.S.

Mr. Barrington, of University College Hospital, who died on March 23, was a remarkable man. He was an outstanding genito-urinary surgeon, to whom colleagues turned for help in difficult cases; yet his writings were almost confined to his physiological researches. He hardly ever wrote about surgery, nor did he speak publicly at meetings. But the keen observation which enabled him to establish a reputation as an experimental worker was applied to every clinical case just as sharply; and, with his impeccable memory, it formed the basis of his immense clinical knowledge.

The combination of laboratory research with practical surgery is often held up to young men as an ideal, but it is seldom persisted in by surgeons as they get older. The picture of such a combination does not call to mind the idea of a good practising doctor, but Barrington was a very good doctor. His private practice was never large: he was not much interested in it, and a shy abrupt manner did not help. But he gave regular and devoted care to his hospital patients. "To deputise for him in the outpatient department when he was away was a humbling experience. Every old patient whose need was not too urgent used to get up and go away." Students saw him as a rather remote and monosyllabic personality; but to anyone who wanted to learn, and was prepared to listen, he was an exciting instructor. Formal speech came to him with difficulty, and his lectures were dry in manner, lacking the vivacity of his conversation. But the material of his lectures was magnificent, and notes of them were really valuable, because there was no book to take their place. His operating technique was swift, gentle, and confident, and his cases did remarkably well. The regularity of his success seemed to be based on the extreme care taken at every stage—the decision what to do, when and how to do it, followed by the aftercare never deputed.

In the period 1914–41 he published what Fulton has called a series of classic papers on the physiology of micturition. These provided the foundation and most of the superstructure of our knowledge of this function and consisted in an able experimental analysis of the chain of reflex reactions that together subserve micturition. Barrington never received the academic recognition these researches deserved, though those who have worked in this field have never doubted their originality and their importance. "Though an unselfseeking man, he was acute enough to know this, but great enough not to fester about it." His industry was immense, and his knowledge of the genito-urinary anatomy of the mammalia extensive. F. M. R. W. recalls how, from the pathological department of the Zoo, he used to return to the medical school "proudly bearing trophies of terrifying dimensions and of surprising origins."

Having qualified in 1907 and held a Beit fellowship, Barrington served during the first world war in cruisers in the Royal Navy, and then returned to a post on the surgical unit at University College Hospital, shortly afterwards being elected to the staff as urologist. He was also appointed to St. Peter's Hospital. On the outbreak of the second world war he joined the Emergency Medical Service staff at Colindale Hospital and lived at "The Woodlands." As air-raid casualties were admitted in only small numbers, a large genito-urinary unit was developed, drawing patients from University College Hospital and St. Peter's and St. Paul's. Thus he was able to carry on his usual activities in comparatively rural surroundings, and living there with other medical staff proved congenial to him; characteristically he would remark that he had not been "so comfortable since the last bloody war." He was difficult to get to know, but once he had established a link—and usually one relating to some outdoor pursuit—that person, whatever his age, became his friend: he was thereafter referred to by Barrington as "old so and so," and however youthful was treated from then on as an equal.

Though his main interest outside medicine was in ornithology, he was also a keen botanist and zoologist.

"During the late war," writes W. E. S., "he made detailed annual lists of birds and wild flowers seen at Colindale, which it was possible to print on the patients' press. Characteristically he took no interest in garden flowers, regarding them as false and artificial. He also enjoyed shooting and sailing, and was always glad to accept an invitation for a cruise, when he would spend long hours at the tiller observing sea birds, or to visit some place of interest in the country.

"Apart from good dining, he cared little for personal comforts, and there was much of the ascetic in his nature: five centuries earlier he would no doubt have been a monk. He never drove a car, and walking, even in London, was his favoured mode of transport. His spare figure, with cropped head, always hatless and coatless, carrying an attaché case containing cystoscope, binoculars and macintosh, striding along in the Harley Street area, was familiar to many. Although undemonstrative, his was a generous nature, as many hospital servants and the like in trouble well know."

It will be evident that Barrington was a many-sided man. To some he was the experimental physiologist. To U.C.H. students he was "Snorker"; he was "Fitz" at St. Peter's; and he was known to many through his love of natural history. He had, in fact, innumerable interests—though these did not include committees and administration.

"Shy with strangers, he enjoyed with gusto meeting his friends, and there are many who will find life duller and less interesting because no longer will they see that shy angular figure. One met him perhaps after a long time: his face lit up: some pertinent characteristic greeting would be followed by some tale or observation, and after parting one had another memory of Barrington and almost always with laughter in it."

F. M. R. W. writes of the "generations that have come to know him, love him and trust him over the forty years of his association with University College Hospital and since.

"Despite his somewhat farouche manner, and an occasionally alarming vocabulary drawn from the more vernacular variants of the special terminology of his branch of surgery, and at times liberally adorning his postprandial conversation, no-one could be more gentle, kind, and thoughtful than he was. There was neither guile nor malice in him. In a sense he remained a boy all his life. He loved the open air, was a keen bird watcher, and an enthusiastic, if, at times, a frightening shot. At a memorable Christmas shooting party at Sir John Rose Bradford's hospitable home in Wales many years ago, he and I tied for bottom place."

"Although in a sense a lonely man, he was nevertheless a friendly and a happy one, and inspired great affection in very many who knew him. We shall miss him deeply. *Requiescat in pace!*"

He died suddenly, in the company of friends. A memorial service will be held at St. Pancras parish church at 12 noon on Thursday, April 19.

JOHN EDWARD O'LOGHLEN

L.R.C.P.I.

Dr. O'Loghlen, who died on March 8, had been in practice in South London for over twenty years and was a founder member of the College of General Practitioners. After qualifying in Dublin in 1912 he continued his studies in London, Vienna, and Budapest, and he held hospital posts in Winnipeg and under the Metropolitan Asylums Board before he settled in practice in Clapham. As the stimulating letters which he contributed to our columns showed, he still found time to read widely and shrewdly in Continental as well as English journals.

A. K. H. writes: "Characters are rarer now in Medicine. One of these (and a good friend) was lost to us when J. E. O'Loghlen died. It was he who taught me the importance of a close and wide knowledge of anatomy to a general practitioner, who more than anyone needs it for dealing with pain in all its moods and tenses, whether treating a disease himself or passing it on appropriately. O'Loghlen felt acutely the discouragement that four changes in nomenclature have laid on those of our generation who wish to renew their anatomical youth.

"Our own debt to him is great. Seven years of postgraduate study in Vienna had sharpened his clinical eye and his knowledge of innumerable wrinkles. One of these—his use of ethyl

chloride anæsthesia for tiding over or for curing local pain—served us repeatedly. Apart from ordinary practice, it won two 'firsts' for his old medical school, the Royal College of Surgeons in Ireland—the one a light-weight boxing title in the British and Irish Inter'varsity contest where a thumb, dislocated outwards to a right-angle, was made viable for a final win; the other when a key man in a short-handed basket-ball team tore an adductor muscle and then returned to score after it was 'frozen.'

"His kindliness was unfailing and his wit imperturbable. Handing a prescription to someone of like humour during the blitz, he added 'You may not need this' as a V1 bomb came in a bee-line. His presence and his manual skill gained his patients' fullest confidence. My own heartfelt relief at his return when I did a locum for him echoed their immense esteem. His sole concern was with his patients' welfare, and in this best of senses it is true that 'no city has given birth to a man, more munificent in heart, more ungrudging in hand. Sand escapes our numbering; and who shall count the glad assuagement that he brought?'"

HENRY JAMES CRAIG GIBSON

M.A. Glasg., M.D. Edin., J.P.

Dr. H. J. C. Gibson, medical superintendent emeritus of Dundee Royal Infirmary, died at his home in St. Andrews on Jan. 28 at the age of 67.

He was the only son of the Rev. J. D. W. Gibson of Carmichael, Lanarkshire, and he was educated at Merchiston Castle School and at Glasgow and Edinburgh Universities. After qualifying in 1914, he held house-appointments in Edinburgh Royal Infirmary. On his return from war service in 1919 he took up a career in medical administration, and in 1920, while principal medical officer of Craiglockhart Poorhouse and medical superintendent of Craiglockhart Hospital, Edinburgh, he graduated M.D. With his appointment as medical superintendent of Dundee Royal Infirmary in 1922 he began his life's work. During the 31 years of his administration the infirmary not only kept pace with the rapid developments in the older branches of medicine but successfully entered new fields. The smoothness of this transition and the lively interest and support that the citizens of Dundee and its surroundings gave increasingly to their hospital were due in no small part to his energy and tact.

[Annan

His colleagues hold that "his integrity and the breadth of his knowledge and experience were prime causes of the harmonious relations existing between the honorary and the salaried staff and the board of directors, and respect for his sense of judgment and his transparent honesty more than once kept bitterness from a discussion. Those going to him on some official errand in which personal issues were involved found a wise counsellor and often a kindly friend. His direction of the infirmary though close and detailed was based on trust of the staff and he he was rarely disappointed."

Dr. Gibson was always conscious that his first duty lay to the infirmary, but he served on several committees connected with nurses' salaries and other matters. His initial opposition to a health service derived chiefly from his fear that the individual patient would suffer in the increasing complexities of a vast organisation, but when the scheme was introduced he endeavoured to carry over into it the best of the traditions of the voluntary hospitals. He was for a time on the board of management of Dundee Royal Infirmary. The interest of St. Andrews University in its main teaching hospital also commanded his willing coöperation. His work was widely appreciated in the university, and in 1948 he was appointed lecturer in the history of medicine. In this year his history of the Dundee Royal Infirmary was published privately.

His chief relaxation lay in classical studies and he made contributions to a new Oxford Latin dictionary on the basis of his studies of Latin medical works; a translation and critical examination of Anthimus gained him the history of medicine prize of Glasgow University in 1940. After he retired to St. Andrews in 1953 he was elected a member of the Royal and Ancient Golf Club and he also served on the council of St. Leonards School. Unfortunately within a year of his retirement illness curtailed his new activities, but it called out the cheerful quiet courage that illuminated his character.

W. G. C. writes:

Perhaps Dr. Gibson's influence was most clearly seen in the general methodical management of the patients and the hospital services, for he had the orderly brain of a business man as well as the clinical acumen of a trained physician. In Scotland we have always liked our medical superintendents, and men like Dr. Gibson, held in respect and affection, both by lay members of the board and by the medical staff, justify our ideas. A medical superintendent has hard tasks, and hard masters and servants, especially when voluntary contributions necessitated purse-cutting, and it says much for Dr. Gibson that he could refuse or agree without offence, for we soon came to realise that he saw beyond the immediate request, and we saw too that his guiding interest was the true welfare of the sick.

When the infirmary was taken over by the board of management, he was invaluable in advising and helping the young board. Here, too, he faithfully served the hospital he loved, and it was hard for him to see expansion and development outside his own domain. Changes had come and he found it difficult to accept them. But he left a most valuable history of the infirmary, which will show for succeeding generations the great place a local hospital had in the hearts of the people, and the great voluntary services rendered by the staffs and contributors. Perhaps we are gradually returning to more local administration and more local pride in our institutions. If so it will be because, to many of us, places run by such men as Dr. Gibson remain as happier memories.

In 1917 he married Miss Christine Wilson, who survives him with a son and daughter.

ERNEST JENNER WRIGHT

M.B.E., M.R.C.S., D.T.M.

Dr. Jenner Wright, honorary consulting physician to the government of Sierra Leone, and a former specialist physician in the Colonial Medical Service in Sierra Leone, died in Freetown in December. He was 63 years of age.

His father was a well-known African barrister, and he was educated in Belgium. He studied medicine in London at St. Mary's Hospital Medical School and qualified in 1914. Two years later he joined the Colonial Medical Service and settled in Freetown. As his appointments show, he won recognition as an outstanding clinician, but he also found time for research into the deficiency diseases. D. G. F. M., as his contemporary in West Africa, though in another Territory, writes:

"He was the first in West Africa to recognise the syndrome we know today as ariboflavinosis, with its associated neurological manifestations, as a nutritional disease. He first described it in 1926 in the Annual Medical and Sanitary Report of Sierra Leone, and in 1930 it was again described in his privately printed *A and B Avitaminoses of Sierra Leone* and was mentioned in Leitch's *Dietetics in Warm Climates*. His work will remain a lasting contribution to our studies in tropical nutritional diseases. Later Wright, like his contemporaries, became greatly interested in the theory of the late Alfred Clark, who believed the cause of pellagrous deficiency diseases was a toxic one. Clark held that the foods prepared from the staple foodstuffs such as manioc, maize, the millets, and sorghums still contained traces of cyanic glucosides, and these acted as respiratory inhibitors of cellular metabolism: to meet this, by detoxication of the cyanic substances, there was an excessive demand on the sulphur of body-protein.

"Jenner Wright's name is honoured in West Africa as one of its greatest doctors. He has earned a wider fame in the annals of nutrition as a contributor to our knowledge of one of the great tropical deficiency diseases."

After he retired in 1949 he served as chairman of various wage boards. He was interested in numismatics and old books, and his library and collection of West African coins were extensive. He leaves a widow and three daughters, one of whom is a doctor.

COLIN MACKAY KESSON

M.D. Glasg., F.R.F.P.S.

Dr. Kesson, assistant physician to Stobhill Hospital, Glasgow, died on March 3. He qualified from the University of Glasgow in 1939, and proceeded to the degree of M.D. in 1944. Four years later he became F.R.F.P.S.

S. A. writes:

[Memore

In Colin Kesson there was something of the inscrutable, an element of mystery which created the impression of aloofness. His demeanour was grave and his habit thoughtful beyond his years. Such were his inherent qualities and upbringing that his name became synonymous with the virtues of deep earnestness and complete integrity. His personality revealed in startling fashion the kinship of antagonistic emotions—when a gust of laughter would sweep him away and bring release from the thraldom of sombre reality. In conversation he was an intent listener, but he showed extreme diffidence in offering his own opinions unless given time for mature consideration. Only those who were near him realised his intense interest in clinical medicine and the shrewdness of his judgment. He had the gift of identifying himself with the patient's hopes and fears: with great deftness he could strip a problem of its academic trimmings and place the patient as an individual—human and unique—in the foreground of the clinical picture. For a few years he watched with philosophic calm the ebbing away of his cardiac reserve; and he died in the moment when he was attaining to full maturity as a senior physician. But his courage was in keeping with his record of service at Stobhill General Hospital, and it will be remembered as a fitting memorial to a gentle personality, a patient teacher, and a doctor who was devoted to his calling.

BERTRAM SAUNDERS

M.D. Aberd.

Dr. Saunders, who died in the Middlesex Hospital on Feb. 21 at the age of 91, graduated M.B. at the University of Aberdeen in 1894. After taking his M.D. in 1897 he came to London where he was a contemporary of Sir John Bland-Sutton as a postgraduate student at the Middlesex Hospital. He held resident appointments at the North East Hospital for Children, Hackney Road, and the City of London Hospital for Diseases of the Chest. For many years he practised in Foley Street, a few yards from the Middlesex Hospital, and G. D. H., one of his younger colleagues there writes: "With his old-world courtesy and kindly smile Dr. Saunders was a familiar figure in the neighbourhood. Towards the end of his life he had known hard times, but his great fortitude and optimism helped him to make little of this and remained with him until the end."

JOHN GORDON

M.D. Leeds, M.R.C.P., D.P.H.

Dr. Gordon, reader in clinical bacteriology in the University of Leeds, died on March 6. He qualified at Leeds in 1918 and took the D.P.H. three years later. In 1925 he graduated M.D. with distinction. A year earlier he had become lecturer in bacteriology in the university. Most of his work was done in association with Prof. J. W. McLeod, F.R.S. He carried out many original investigations and published a large number of papers, particularly on complement and bacterial respiration. He leaves a widow and two daughters.

R.A.H. writes:

John Gordon was a man who was widely loved by his medical colleagues and also by the hundreds of students who passed through his hands. In all his dealings he was strictly honest and thus his advice was always sought and listened to with deep respect. At first sight he appeared to have a rather shy personality, quiet in speech and manner and sometimes diffident, but at heart he was a warm and likeable character. In his subject he was a remarkable man. He had a phenomenal memory, and having read widely in bacteriology he possessed a wealth of information which was always at the disposal of those who worked with him.

Dr. ARTHUR FELIX

Prof. A. Pijper, who met Dr. Felix at the Lister Institute in 1928, writes:

I can still see him, waving a paper of mine in which I had advocated complement-fixation for typhoid diagnosis and taking me to task because I had not seen that my complement-fixators were practically the same as O-agglutinins and "why don't you people read what I write?" The next few days I had private tuition in the mysteries of H and O and I went back to spread the gospel of receptor analysis in Africa. This led to much correspondence between us, at first in German, which in the early '30s somewhat abruptly changed into English. The correspondence became even more voluminous when I tried to sort out tick-bite fever and murine typhus and louse typhus in South Africa; I could never have done it without Felix's constant advice and his invaluable cultures. Then came his finding of the Vi-antigen and the carrier that had Vi-agglutinins and I hurried to confirm this on the few carriers I knew. When I told him this he wrote back with characteristic generosity: "better publish quickly, I have a paper ready with several times the number of your carriers, and I shall hold back my paper, for if yours comes out after mine, it might fall rather flat."

Felix felt at home in Britain: the local humour suited him, witness the remark in one of his publications that his earlier papers had "genossen allgemeiner Nicht-Beachtung." He was quick to adapt himself. I remember a meeting of a research club in London where his work came under fire and the chairman asked him to say something. Felix got up, smiled, shook his head, and said: "I have not the English." He acquired "the English" very rapidly! In his last years he devoted himself with great enthusiasm to Craigie's discovery of phage-typing and again we had many years of the most pleasant coöperation. Personally I always looked upon Felix as an inspired man. That was the only way in which I could explain how and why he collected and hung on to those famous cultures Ty 901, Ty 2, X 2, X 19, and many others, without which modern bacteriology is unthinkable. And he did this, with his remarkable tenacity, through a whole world war, in a laboratory in a railway-carriage, through a home-coming to a totally disordered Austria, and through many years of a somewhat roving existence with scanty recognition, until the Lister Institute gave him what was due to him. He greatly enjoyed working there, in the same way as he was quietly very proud of his election as an F.R.S.

Mr. FRANCIS JARDINE, consulting surgeon to the Edinburgh Royal Infirmary and a former president of the Royal College of Surgeons of Edinburgh, died on March 27 at his home at Elie.

Births, Marriages, and Deaths

BIRTHS

BINNS.—On March 27, at Kingsbury Maternity Hospital, London, N.W.9, to Mary, wife of Dr. T. B. Binns—a daughter.

JEFFERSON.—On March 26, at the Radcliffe Infirmary, Oxford, to Eirlys (formerly Hughes), M.R.C.P., D.C.H., wife of Antony Jefferson, F.R.C.S., a sister for Ann and Jane.

SHARPEY-SCHAFER.—On March 28, at St. Thomas's Hospital, S.E.1, to Dr. Sheila Howarth, wife of Prof. E. P. Sharpey-Schafer—a daughter.

DEATHS

ROBSON.—On March 22, at Bournemouth, Thomas Robson, M.D., M.R.C.P., senior physician, Royal Victoria and Bournemouth Hospital and Christchurch Hospital. (Corrected notice.)

SANDS.—On March 10, at St. Ebba's Hospital, Epsom, Dalton Eric Sands, F.R.C.P.E.

Appointments

AITCHISON, J. D., M.B. Glasg., M.R.C.P., F.R.F.P.S.: asst. cardiologist, Aberdeen general hospitals.

CADOGAN, G. S., M.B. Madras, D.P.M.: asst. psychiatrist, Rainhill Hospital, Liverpool.

MAVOR, R. H. M., M.B. Glasg., F.R.F.P.S.: asst. chest physician, Aberdeen special hospitals.

MURRAY, R. O., M.B. Camb., D.M.R.: part-time consultant radiologist, Royal National Orthopædic Hospital, London.

STELL, E., M.B., D.A.: part-time asst. anæsthetist, Chester group of hospitals.

Notes and News

THE HOUSING PROBLEM IN THE TROPICS

MODERN industry, with its demand for urban labour forces and better communications, can have profound effects when rapidly introduced into a predominantly agrarian community; and in some of the tropical and subtropical countries of the British Commonwealth the advantages of industrial development are offset by the disadvantages of breaking down tribal barriers and customs, disrupting family life, and weakening the productive resources of the countryside by attracting workers to the towns.

For the creation or preservation of a stable community, which will use its resources fully, good housing is of paramount importance. As Sir Selwyn Selwyn-Clarke [1] puts it, "unsettling thoughts and desires to emigrate to other countries or to crowd into cities are much less likely to occur in the minds of those whose roots in their traditional ancestral lands are renewed and reinforced through the replacement of a leaky and insanitary hovel by an attractive dwelling in which they can feel a justifiable pride." But, he says, attention has to be paid to designing and siting the houses in line with local customs and activities, and so far as possible with individual tastes. Villages and townships should be planned to keep pace with housing development, with social centres, schools, shops, and clinics; while the establishment of crafts and small industries will further help prevent the drift to the towns.

In underdeveloped areas, land tenure is always a controversial subject; but, in Africa particularly, there are signs that government policy is changing towards giving Africans the land they occupy. Supporting this policy, the East African Royal Commission of 1953–55 contended that reserves, tribal boundaries, and the present system of land tenure perpetuated primitive methods of cultivation, which was bad for the economy and which depressed the standard of living. But, though the commission suggested certain safeguards in the transference of land between races, Sir Selwyn doubts whether these are adequate so long as the peasant, chief, or headman may sell his land to wealthy individuals or finance corporations, thereby alienating it from the community which formerly possessed it. He makes three proposals to avoid this: (1) the holder should utilise the land to the common good; (2) he should not be allowed to transfer ownership except by permission of the tribal council or coöperative; and (3) on his death his land should go to one son. (At present land is often divided among so many heirs that each becomes the owner of an inconvenient fragment.) If a man dies childless, his land should revert to the tribe or coöperative, which would be responsible for re-allotting it and making provision for his widow.

Sir Selwyn believes that housing is as much a public concern as water-supplies, roads, schools, and hospitals, and like them should be a communal responsibility. In his view the State should house those who are too poor to make adequate arrangements for themselves. In underdeveloped territories the best means of doing this, he suggests, is for the central government to assume responsibility for planning and financing housing schemes and to leave the local authorities on the spot to implement, supervise, and maintain them.

Turning from housing to houses he has some equally shrewd and practical suggestions. He is insistent that there should be no more back-to-back single-room shanties, but instead three-room family houses each with kitchen, bathroom, and closet. As rule-of-thumb measurements he suggests that the floor area of a living-room in the tropics should not be less than 120 sq. ft., with a window opening not less than a tenth of the floor area. But he recognises that hygiene is less likely to be accepted when it runs counter to tradition. Thus ventilation and light will be more easily introduced into a Moslem household if the window of the women's room opens on an inner courtyard and a latticed vent is placed on the outer wall. He points out that the success of a housing scheme, as of so many other projects, depends on a good start. Building materials, whether they be bricks and mortar, or bamboo, palm fronds, and dried mud, are not enough. The success of a housing scheme will depend on carefully selected tenants being taught "the use and abuse of housing by a capable, energetic and tactful housing estate manager."

1. *New Commonwealth*, Dec. 12 and 26, 1955, pp. 577 and 632.

THE DRUG BILL

THE Committee of Public Accounts [1] has lately expressed concern at the prices paid for proprietary preparations and basic drugs, which "include a profit margin substantially in excess of that hitherto accepted as appropriate for Government contracts." A Treasury minute [2] on the committee's report expresses awareness of the need to complete promptly the negotiations with the Association of British Pharmaceutical Industry. These negotiations still centre on proprietary drugs—a field in which very great difficulties have been encountered. "It is necessary to reconcile the particular interest of the Health Service in obtaining economical supplies of drugs with the wider public interest in the continuance of a developing pharmaceutical industry." If, says the Treasury, the present negotiations cannot be concluded satisfactorily, the committee's suggestion of annual rebates from manufacturers whose prices have been shown to be excessive will be explored.

A NEW KIND OF NURSING COURSE

As a result of the Scottish Health Service Council's report [3] on the job analysis prepared by the Nuffield Hospitals Trust, an experimental training course for 75 students is to be held at Glasgow Royal Infirmary. The first 25 students will begin next September. The aim of the course will be to develop leadership and judgment. It is to be financed by the Department of Health for Scotland and the Trust. It has been approved by the General Nursing Council for Scotland.

The course will be suitable for university graduates, and for girls with a good higher leaving certificate or other education qualification. They should be between 18 and 25 years of age. There will be no fee, the usual training allowances (£240 during the first year of training and £250 during the second year, with a deduction of £113 for board, lodging, and uniform) will be paid. The students will not be required to sit the preliminary State examination, and they will take their final State examination after two years of concentrated study. But they will not be eligible for registration until they have completed a third year of hospital experience during which they will act as staff nurses.

HOSPITAL COSTING

THE Minister of Health [4] has accepted the main recommendations of the working party which devised a system of costing the departments and services of a hospital.[5] These recommendations are to become effective from April 1, 1957. The new method should, in the Minister's view, "be a substantial further aid to efficient and economical administration."

A STUDY OF CEREBRAL PALSIED

THE British Council for the Welfare of Spastics has published several useful booklets for parents of children suffering from cerebral palsy. The latest booklet [6] is different, for most parents would find it difficult reading. On the other hand those who have to plan the education of the cerebral palsied, and their psychologists and teachers, will be interested and helped by the study of 168 Liverpool children which is described. One may question such statements as "The lesion in rigidity is believed to be in the cerebellar system," but in her own field the author writes with convincing sincerity. She has found that the Terman-Merill scale is generally satisfactory for testing these children, but she is far from ignoring the effects of such things as mixed laterality, visuospatial disability, and emotional disturbance. Although she may differ in details of method from some other psychologists, her assessment would pass the pragmatic test—it works.

TRAINING THE BLIND

THE film *Conquest of the Dark* (16 mm., sound, 27 min.) shows the progress of a blind man through the Royal National Institute for the Blind rehabilitation centre at Torquay and the Ministry of Labour training centre at Letchworth. It emphasises the restoration of confidence, competence, and sense of achievement. Copies of the film are available from the Royal National Institute for the Blind, 224, Great Portland Street, London, W.1.

1. Third Report from the Committee of Public Accounts, session 1955–56. H.M. Stationery Office, 1955. See *Lancet*, 1955, ii, 1239.
2. Special Report from the Committee of Public Accounts, session 1955–56. H.M. Stationery Office, 1956. Pp. 15. 9*d*.
3. See *Lancet*, 1955, i, 804.
4. H.M.(56)24.
5. Ministry of Health: Report of the Working Party on Hospital Costing. H.M. Stationery Office, 1955. See *Lancet*, 1955, ii, 241.
6. A Psychological Study of a City's Cerebral Palsied Children. By ELLA B. FLOYER, M.A., DIP.ED., formerly educational psychologist, Liverpool Education Committee. London: British Council for the Welfare of Spastics. Pp. 88. 3*s*. 6*d*.

A HOSPITAL ROMANCE

The Feminine Touch, a film from Ealing Studios which opened in London last week, is an embarrassing mixture of a little fact and much fiction. The original intention may have been to show, in a lighthearted way, how the student nurse lives and works—a subject likely enough to seize the interest of the many who have ever crossed a hospital's threshold. But then, it seems, the producer's heart misgave him: this, he may have thought, is no subject to lure the public from their home screens. Anyhow, almost all else is sacrificed to follow the romance between the blonde probationer and the house-physician. Despite brave talk of vomiting patients, a revealing glimpse of a sluice-room, and one or two trips into a ward to meet selected patients, this is simply another boy-meets-girl story. Perhaps, after all, that was the producer's intention; but we should at least have been spared the matron's Nightingale voice in this incongruous setting. Acting honours are shared by Diana Wynyard, an old trooper who plays the winsome matron with a blush that may owe something to Technicolor, and Mandy, a young one, whose stalwart sincerity is proof against this incursion into Ealingland.

AN INTERNATIONAL POSTBAG

AN international corresponding club has been formed by workers in preventive and social medicine. Its 42 members are drawn from teaching and research departments in fifteen different countries. The club publishes twice yearly a bulletin to which members send news of the work in progress in their departments. Copies, which are available to non-members at 5*s*. or $1, are issued alternately from the Department of Social and Industrial Medicine, University of Sheffield, England, and from the Department of Preventive Medicine and Public Health, Cornell University Medical School, 1300, York Avenue, New York, U.S.A.

University of Cambridge

On March 10 and 24 the following degrees were conferred:

M.D.—G. S. Brindley, K. C. Dixon, P. H. Friedlander, L. G. Higgins, D. S. H. W. Nicol, J. R. K. Preedy, R. G. Tasker.
M.Chir.—D. W. T. Roberts, T. M. Robinson, W. F. W. Southwood.
M.B.—Katrine M. Parry, R. L. Rothwell-Jackson.
M.B., B.Chir.—F. E. Loeffler.

University of London

Dr. John Marshall, senior lecturer in neurology in the University of Edinburgh, has been appointed to the University readership in clinical neurology at the Institute of Neurology.

Dr. Marshall after graduating M.B. in the University of Manchester in 1946 held registrarships at the National Hospital, Queen Square, London, and in the department of neurology of the Royal Infirmary, Manchester. He has also served as a senior medical specialist in the R.A.M.C. with the rank of major. He took the M.R.C.P. in 1948, the M.D. in 1951, and the D.P.M. in 1952. Besides his university lectureship he holds the appointment of consultant neurologist to the Scottish South East Regional Hospital Board. He has published papers on disseminated sclerosis, sensory disturbances in cerebral wounds, and on Raynaud's disease.

The title of reader in dental surgery (preventive dentistry), has been conferred on Mr. R. D. Emslie, M.S., in respect of his post at Guy's Hospital Medical School.

University of Leeds

At recent examinations the following were successful:

M.B., Ch.B.—Margaret E. Carter, R. S. Kocen (with honours); I. D. Adams, Michael Barton, I. S. Berg, John Clifford, Doreen Crawshaw, W. B. Davies, James Dowson, H. G. Egdell, G. H. Elsworth, D. M. Fletcher, D. C. Fluck, Martin Gittleman, N. M. Harland, P. J. Holland, Michael Ibberson, S. I. Jacobs, Evelyn M. M. Jones, W. W. Kershaw, E. P. Langworth, J. M. Littlewood, L. W. Lowe, Elizabeth J. Marsh, D. M. Morgan, M. A. Page, Jean M. Phillips, Gwendolen R. Plumbly, B. H. Rance, M. D. Rawson (Distinction in Surgery), S. S. Richardson, A. V. Sheard, Kurt Simon, B. A. M. Smith, R. G. Spector, Wee Foh Ta-Min, S. I. Thackstone, D. H. Thomas, G. B. Walker, J. M. Wilde, Pamela M. Zinkin.
D.P.M.—Dorothy J. Galbraith, Frank Lake, I. C. Wilson.

University of Sheffield

Dr. Robert Kilpatrick has been appointed lecturer in pharmacology.

University of Durham

Dr. C. H. Tonge, senior lecturer in anatomy, has been appointed reader in oral anatomy in the Newcastle division of the university.

The court has approved the creation of the new post of professor of dermatology in the division.

University of Liverpool

On March 27 the degree of M.D. was conferred on Cynthia J. Discombe and the degree of M.CH. ORTH. on I. K. Sharp.

University of Birmingham

On Thursday and Friday, April 26 and 27, Dr. H. L. Kottmeier, head of the gynæcological department of Radiumhemmet, Caroline Institute, Stockholm, will give the Ingleby lectures, on Carcinoma of the Cervix and Corpus. On May 14, 15, and 16, Prof. P. B. Medawar, F.R.S., will deliver the William Withering lectures, on Transplantation and Immunology.

University of Reading

Dr. Alick Elithorn has been appointed part-time lecturer in psychopathology.

University of Edinburgh

On July 6 the honorary degree of LL.D. is to be conferred on Prof. G. R. Cameron, F.R.S.

University of Glasgow

On June 20 the honorary degree of LL.D. will be conferred on Dr. H. C. Cameron, Dr. Edward Glover, and Dr. T. J. Honeyman.

University of Dublin

At a recent examination for the diploma in gynæcology and obstetrics the following were successful:

Ram Lal Chugh, Surendra Nath Das, Bimla Devi Dugal, A. M. MacIntosh, Mira Vinayak Muzumdar, Attiya Sabir, Kantilal Manmohandas Soparkar.

Royal College of Physicians of London

Prof. F. T. G. Prunty will give the Humphry Davy Rolleston lectures at the college, Pall Mall East, S.W.1, on Tuesday and Thursday, May 15 and 17, at 5 P.M., on Chemical and Clinical Problems of the Adrenal Cortex.

Royal College of Physicians of Edinburgh

Prof. F. H. Smirk will deliver the George Alexander Gibson lecture to the college, 9, Queen Street, Edinburgh, 2, on Tuesday, May 8, at 5.30 P.M. His subject will be the Treatment of Hypertension.

Royal College of Physicians of Ireland

On March 28 the following were admitted to the licence of medicine and midwifery of the college:

R. R. Bazeley, C. J. Curran, Usha Devi Gautama, P. W. A. D. Keating, Margaret M. Kelly, O. E. McCutcheion, Mary R. McLoughlin, W. M. Reid, Harry Sternberg, G. R. Withers.

Faculty of Anæsthetists

The 8th anniversary dinner of the faculty was held at the Royal College of Surgeons of England on March 21. The Minister of Health, Mr. R. H. Turton, proposed The Faculty, and the dean, Dr. Frankis T. Evans, replied. The guests were welcomed by Dr. Ronald Woolmer, director of the faculty's new research department; and his toast was acknowledged by Mrs. Pandit, High Commissioner for India, and by Lord Adrian, O.M., F.R.S.

Transfusion and Hæmatology Congress

The International Society of Blood Transfusion and the International Society of Hematology will hold their congress in Boston between Aug. 27 and Sept. 5.

Medical Artists' Association of Great Britain

Forms of application for the examination for membership of this association may be had from Miss Susan Robinson (medical artist), West Middlesex Hospital, Isleworth. The last day for entries is Saturday, May 26.

Medical Art Society

This society is holding an exhibition at Walker's Galleries, 118, New Bond Street, London, W.1. Until April 21 it will be open from 10 A.M. to 6 P.M. (Saturdays 10 A.M. to 1 P.M.).

International Association of Gerontology

This association is holding a congress at Merano, Italy, from July 14 to 19, 1957. In connection with the congress an international symposium will take place in Venice on July 20 and 21 on medico-social aspects of senile nervous diseases. Further particulars of both meetings may be had from the secretariat, Viale Morgagni 85, Firenze, Italy.

British Empire Cancer Campaign

The Duke of Devonshire has been elected chairman of the grand council of the Campaign in succession to the late Lord Horder.

Society of Chiropodists

The annual dinner of this society will be held on Friday, April 27, at 7 P.M., at the City Hall, Cardiff, under the presidency of Mr. J. H. Hanby, F.CH.S.

World Health Organisation

The ninth World Health Assembly is to be held at Geneva from May 7 to 18. At the same time the World Federation of United Nations Associations is holding its seventh seminar on the World Health Organisation. Further information about the seminar may be had from the federation, 1, Avenue de la Paix, Geneva, Switzerland.

Ergonomics Research Society

On April 16 to 19, at Bristol University, this society will hold a symposium on Human Factors in Road Transport. Further particulars may be had from H. Murrell, Department of Psychology, 22, Berkeley Square, Bristol, 8.

European Society of Hæmatology

This society will hold a congress in Copenhagen from Aug. 26 to 31, 1957, under the presidency of Dr. J. Bichel. The secretary-general is Dr. Aa. Videbæk, Blegdamsvej 11, Copenhagen, Denmark.

International Congress of Internal Medicine

The 4th International Congress of Internal Medicine is to be held in Madrid from Sept. 19 to 23. The main subjects chosen for discussion are the rôle of the adrenals in the pathogenesis and evolution of internal diseases, and bronchial asthma and emphysema.

Wessex Rahere Club

A dinner of this club will be held at the Clarence Hotel, Exeter, on Saturday, April 28. Membership is open to all Barts men practising in the west country. The hon. secretary is Mr. A. Daunt Bateman, 11, The Circus, Bath.

N.A.P.T. Travelling Fellowship

The Scottish branch of the National Association for the Prevention of Tuberculosis is offering a postgraduate travelling fellowship (£250). Doctors working in Scotland on tuberculosis are invited to apply before June 30. Full details may be had from the Scottish secretary, N.A.P.T., 65, Castle Street, Edinburgh, 2.

Reciprocal Agreement with New Zealand

An agreement on social security between the United Kingdom and New Zealand came into operation on April 1. From that date, people in this country are able to draw National Insurance benefits by virtue of their residence in New Zealand. Anyone who wishes further information should apply to a local office of the Ministry of Pensions and National Insurance.

Indian Medical Service Dinner Club

The annual dinner of this club will be held at the East India and Sports Club, St. James's Square, London, S.W.1, on Friday, June 8, at 7.30 P.M. Tickets may be had from the secretary of the club, medical board room, Commonwealth Relations Office, Matthew Parker Street, S.W.1.

Oxford Medical Publications

Dr. J. C. Gregory has been appointed head of the medical department of the Oxford University Press and will be responsible for Oxford Medical Publications. Mr. G. T. Hollis, who has held this position for 27 years, has retired owing to ill health but will continue to act as an editorial consultant. The department has now moved to Amen House, Warwick Square, London, E.C.4.

International Congress of Gastroenterology

A meeting of the Association des Sociétés Européennes et Méditerranéennes de Gastro-Entérologie will be held from July 18 to 21 at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2, under the presidency of Dr. Thomas Hunt. The subjects chosen for discussion include ulcerative colitis, pre-malignant conditions of the gastro-intestinal tract, and non-malignant diseases of the œsophagus. Membership is open to all interested, and forms of application may be had from the hon. secretary, Mr. Hermon Taylor, London Hospital, E.1.

General-practitioner Clinical Assistants

4 general practitioners have been appointed as part-time clinical assistants to the West Middlesex Hospital, Isleworth, and 2 to King Edward Memorial Hospital, Ealing. For these 6 posts 26 applications were received.

Proposed Closure of a London Hospital

The North East Metropolitan Regional Hospital Board has invited the London Executive Council to comment on a proposal by the board to close St. George-in-the-East Hospital, London, E.1, on July 31 this year. In a letter to the council the board points out that since 1948 there has been a shift of population towards the periphery of the region. At St. George-in-the-East the demand has steadily lessened; and there has been increasing difficulty in staffing the hospital adequately. The board is satisfied that other hospitals (of which there are several) in the area can take over the work without inconveniencing the public. At a meeting of the London local medical committee on March 27 the following resolution was passed *nem. con*:

That in view of the grave difficulty in securing hospital beds in London for patients who need them, probably greater now than at any time since the National Health Service started, the London local medical committee protests most strongly against the proposal to close St. George-in-the-East Hospital.

That the Minister of Health be asked to receive a deputation from the committee.

A bibliography on penicillin V is obtainable from the Distillers Company (Biochemicals) Ltd., Fleming Road, Speke, Liverpool, 9.

Dr. Margaret Fitzherbert, head of the maternity department of the Princess Tsahai Memorial Hospital, has been made a chevalier of the Order of Menelik II by the Emperor of Ethiopia.

The selling rights of *Principles of Medical Statistics*, by Prof. A. Bradford Hill, F.R.S., are held in the United States and Canada by Oxford University Press Inc., 114, Fifth Avenue, New York 11, N.Y., U.S.A.

The Directors of the Nursing Press, Ltd., have decided to cease publication of the *British Journal of Nursing* after the April issue, owing to increased costs of production.

Diary of the Week

APRIL 8 TO 14

Tuesday, 10th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Dr. F. Avery Jones: Clinical and Social Problems of Peptic Ulcer. (First of two Lumleian lectures.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Psychiatry*. Dr. A. R. May, Mr. M. S. Folkard, Dr. R. K. Freudenberg, Mr. J. P. S. Robertson: Changing Conception of the Function of the Mental Hospital.

Wednesday, 11th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine*. Dr. H. D. Darcus, Dr. D. A. Brewerton: Methods of Increasing Muscle Strength.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. (Medical School, University of Manchester.) Dr. F. R. Ferguson: Reflections on Therapy in Neurology.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St. Vincent Street, Glasgow, C.2
5 P.M. Dr. Frank E. Adair (New York): Some Newer Considerations of Breast Cancer.

Thursday, 12th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Dr. Avery Jones: Clinical and Social Problems of Peptic Ulcer. (Second of two Lumleian lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Dr. Leon Gillis: Amputations in Children. (Hunterian lecture.)

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, S.W.1
6 P.M. Sir Stewart Duke-Elder: The Eyes of Invertebrates. (Thomas Young lecture.)

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11, Chandos Street, W.1.) Dr. A. Joyce Martin: Lysergic Acid Outpatient Therapy in a Day Hospital.

LONDON COUNTY MEDICAL SOCIETY
3 P.M. (St. Andrew's Hospital, Devons Road, Bow, E.3.) Mr. J. R. M. Whigham: Gastric and Gall-bladder Surgery.

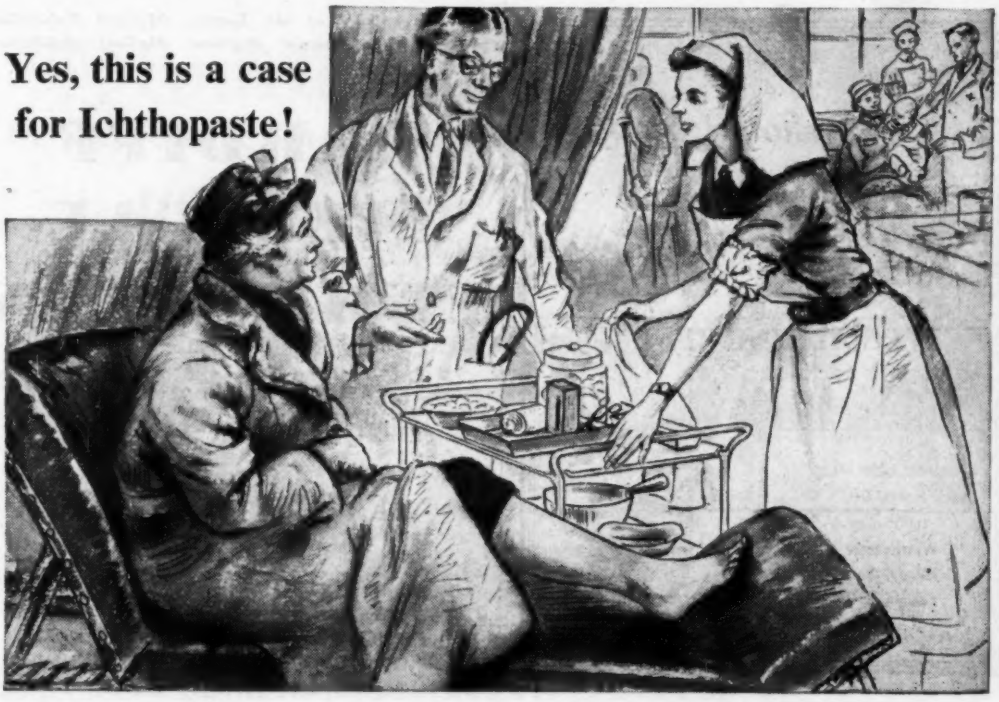
Friday, 13th

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
3.30 P.M. Mr. W. D. Doey: Respiratory Paralysis in Poliomyelitis.

Saturday, 14th

ASSOCIATION OF CLINICAL BIOCHEMISTS
10 A.M. (University of Glasgow.) Joint meeting with Biochemical Society: Symposium on Clinical Control of Electrolyte Deficiencies.

Yes, this is a case for Ichthopaste!



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The very wide range of exhibits by many leading British firms, will demonstrate the latest developments in medical practice and will include ethical medical preparations, surgical instruments, medical equipment, books, hospital equipment, etc. There will be daily performances of films selected for their exceptional medical interest, and facilities will be provided on the premises for obtaining light meals and refreshments. Copies of the invaluable reference book, The London Medical Handbook, will be available to visitors at the specially reduced price of 2s. 6d.

Admission is by official invitation card, posted to arrive by 30th April. Letters referring to non-arrival of invitations should not be sent before that date.

Applications for further information should be addressed to:—
The London Medical Exhibition, 194-200, Bishopsgate, London, E.C.2;
or direct to:
The Cardiff Medical Exhibition, City Hall, Cardiff.

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Academic and Educational

THE UNIVERSITY and the ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

POSTGRADUATE MEDICAL EDUCATION COMMITTEE

REFRESHER COURSE FOR GENERAL PRACTITIONERS

A Refresher Course of 1 fortnights duration designed for General Practitioners will be held from 14TH MAY to 26TH MAY, 1956. The greater part of the Course will comprise clinical demonstrations, ward visits, and lectures in General Medicine, General Surgery, and Obstetrics, but sessions on Infectious Diseases, Child Health, Ophthalmology, Dermatology, and Rehabilitation of the Aged will also be included.

The fee for practitioners not claiming expenses from Government sources is 10 guineas.

Since the number admitted to the Course is limited, early application should be made to the Director of Postgraduate Medical Education, The University, Glasgow, W.2, from whom the syllabus and further information may be obtained.

THE UNIVERSITY OF SHEFFIELD

Courses of Instruction for the DIPLOMAS IN MEDICAL DIAGNOSTIC RADIOLOGY (D.M.R.D.) AND THERAPEUTIC RADIOLOGY (D.M.R.T.) will commence in OCTOBER, 1956. The Courses will cover a period of 2 years of whole-time study, and the fee for each course is 50 guineas.

Applications to attend should be sent to the Dean of the Faculty of Medicine, The University, Sheffield, 10.

UNIVERSITY OF ST. ANDREWS

REFRESHER COURSE FOR GENERAL PRACTITIONERS

A 2 weeks course will be held in Queen's College, Dundee, and associated hospitals from 18TH JUNE to 29TH JUNE, 1956. Teaching will be by lecture-demonstrations and clinical rounds, with emphasis on recent advances in diagnosis and treatment. Accommodation available in students' residences at moderate cost. Course fee £10 10s. Financial assistance, subject to certain conditions, from Department of Health for Scotland. Last date for enrolment, 30th April, 1956.

Further particulars and application forms from Postgraduate Convener, Department of Pharmacology and Therapeutics, Queen's College, Dundee.

INSTITUTE OF ACCIDENT SURGERY

(In conjunction with the Board of Graduate Studies, the Medical School, University of Birmingham)

A COURSE ON THE TREATMENT OF INJURIES
BIRMINGHAM ACCIDENT HOSPITAL
7TH–11TH MAY, 1956
PROGRAMME

Monday, 7th May		
2.00 P.M.	Principles of the Treatment of Injuries as illustrated by Injuries to the Hand	Mr. WILLIAM GISSANE
3.00 P.M.	Primary Treatment of Major Injuries	Mr. P. S. LONDON
Tuesday, 8th May		
10.00 A.M.	Fractures of the Upper Limb	Mr. F. G. BADGER
11.30 A.M.	Principles of the Treatment of Burns	Mr. DOUGLAS M. JACKSON
2.00 P.M.	Head Injuries	Mr. J. M. SMALL
3.15 P.M.	Recent Advances in Diagnosis and Treatment of Hæmorrhage and Shock	Mr. RUSCOE CLARKE
5.00 P.M.	Demonstration of Blood Volume and other Techniques	Dr. ELIZABETH TOPLEY
Wednesday, 9th May		
9.30 A.M.	Tour of the Hospital	
10.45 A.M.	Fractures of the Neck of the Femur	Mr. WILLIAM GISSANE
12.00 A.M.	Fractures of the Shaft of the Femur	Mr. RUSCOE CLARKE
2.00 P.M.	Common Fractures of the Ankle and Foot	Mr. WILLIAM GISSANE
3.00 P.M.	Mechanical Aspects of the Treatment of Fractures	Mr. J. H. HICKS
5.00 P.M.	Demonstration of the use of Common Instruments in the Treatment of Injuries	Mr. F. G. BADGER
Thursday, 10th May		
9.30 A.M.	Chest Injuries	Mr. A. L. D'ABREU
10.45 A.M.	Abdominal Injuries	Mr. P. S. LONDON
12.15 P.M.	Vascular Injuries	Prof. C. G. ROB
2.15 P.M.	Open Fractures	Mr. F. G. BADGER
3.30 P.M.	Treatment of Major Soft Tissue Wounds and Major Wound Infection	Mr. RUSCOE CLARKE
5.00 P.M.	Demonstration—Bacteriological Techniques	Dr. E. J. L. LOWBURY
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9.30 A.M.	Shoulder Injuries	Mr. H. PROCTOR Mr. R. B. BROOKES
11.15 A.M. 1.30 P.M.	Paraplegia	Mr. FRANK HOLDSWORTH

Arrangements will be made to provide facilities for those taking part in the course to attend emergency operations as they occur.

The fee for the Course (including lunch and tea) is 7 guineas.

Applications and inquiries should be addressed to the Secretary, Institute of Accident Surgery, Birmingham Accident Hospital, Bath-row, Birmingham, 15.

TUBERCULOSIS EDUCATIONAL INSTITUTE

Deeside Sanatoria, Aberdeenshire.

A 3-day CLINICAL COURSE will be held on 18TH, 19TH and 20TH APRIL. Fee: £3 3s. (excluding accommodation).

Further information from the Secretary, Tuberculosis Educational Institute, Tavistock House North, Tavistock-square, London, W.C.1.

INSTITUTE OF DISEASES OF THE CHEST

REFRESHER COURSE FOR CONSULTANTS

A Refresher Course for Consultants and Senior Hospital Medical Officers will be held at the Institute from 9TH to 13TH JULY.

9th and 10th July: Symposium on Cortisone and Corticotrophin in Pulmonary Disease.

11th July: Informal demonstrations.

12th and 13th July: Symposium on Emphysema.

Further information and a detailed programme can be obtained from the Dean, Institute of Diseases of the Chest, Brompton, London, S.W.3.

POSTGRADUATE COURSE IN INDUSTRIAL OPHTHALMOLOGY

To be held at the Birmingham and Midland Eye Hospital, 23RD–27TH JULY, 1956.

The course is for Ophthalmologists and Industrial Medical Officers, but is open to all medical practitioners. It will include clinical demonstrations, lectures on industrial diseases and injuries, also visits to local factories and to the Burns Unit of the Birmingham Accident Hospital. Fee: £5 5s. for the full course; £2 12s. 6d. for morning sessions only.

Syllabus can be obtained from the Secretary, Industrial Ophthalmology Course, Birmingham and Midland Eye Hospital, Church-street, Birmingham, 3.

FREUD CENTENARY LECTURES

Friends House, Euston-road, London, N.W.1

The LECTURES will begin at 8.30 P.M. 13TH APRIL, Mrs. M. MILNER, "Psycho-Analysis and Art." 17TH APRIL, Dr. D. W. WINNICOTT, "Psycho-Analysis and the Sense of Guilt." 24TH APRIL, Mr. R. MONEY-KYRLE, "Psycho-Analysis and Philosophy." 27TH APRIL, Dr. E. JAQUES, "Psycho-Analysis and Social Problems in Industry." 1ST MAY, Dr. J. BOWLBY, "Psycho-Analysis and Child Care." 8TH MAY, Miss I. HELLMAN, "Psycho-Analysis and the Teacher."

Tickets 4s. each or 1 guinea for the series, at the door, or in advance from the British Psycho-Analytical Society, 63, New Cavendish-street, London, W.1.

THE ERNEST AND MINNIE DAWSON CANCER TRUST

A COMPETITION FOR GENERAL MEDICAL PRACTITIONERS

Under the provisions of the Trust Deed of the Ernest and Minnie Dawson Cancer Trust a competition is to take place in 1956 in the form of a thesis on the following general subject:—

"Cancer: its early diagnosis, causes, prevention, and treatment."

The competition is open to doctors mainly engaged in general practice who practise and/or reside in Lancashire or Yorkshire; and the prizes offered are £1500 (first) and £500 (second), subject to the merit of the entries submitted.

The competition will close on 31st December, 1956.

Entry forms and detailed conditions of entry may be obtained from the Clerk to the Trust, The Ernest and Minnie Dawson Cancer Trust, 89A, Fishergate-hill, Preston, Lancs.

E. PEARSON, Clerk to the Trust.

THE UNIVERSITY OF LEEDS. Department of Forensic MEDICINE. Applications are invited for a temporary appointment for 1 year from a date as soon as may be arranged with the successful candidate as LECTURER in the Department of Forensic Medicine at a salary within the range £1050–£1600, according to qualifications and experience.

Applications (3 copies), stating date of birth, qualifications and experience, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 27th April, 1956. —¶

THE UNIVERSITY OF SHEFFIELD. Applications are invited for the JAMES MORRISON RESEARCH FELLOWSHIP. The person appointed, who need not necessarily be medically qualified, will be required to pursue full-time research into the treatment of malignant disease by radiotherapy or other methods, at or in association with the David Morrison Research Department of the Sheffield National Centre for Radiotherapy. The normal tenure of the Fellowship is 3 years, and the annual stipend £1000 (with F.S.S.U. or National Health Service superannuation benefits).

Applications (10 copies) should be lodged with the Registrar not later than 28th April, 1956.

UNIVERSITY OF GLASGOW. Applications are invited for a LECTURESHIP IN EXPERIMENTAL SURGERY at the Royal Infirmary. Salary according to placement on University scale for clinical teachers. F.S.S.U. and family allowance benefits.

Applications (12 copies) should be lodged, not later than 30th April, 1956, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

DALHOUSIE UNIVERSITY. Bacteriologist: Assistant Professor Dalhousie University Medical School. To teach medical and science degree students. Opportunities for clinical and academic research. New laboratories being planned. Minimum salary for recent Ph.D. graduate $4800 with increments for experience.

Apply Prof. C. E. VANROOYEN, Department of Bacteriology, 62, University-avenue, Halifax, Nova Scotia, Canada.

THE UNIVERSITY COLLEGE OF KHARTOUM, Sudan. Applications are invited for appointment to :—

CHAIR OF PATHOLOGY.

CHAIR OF SURGERY.

Salaries : £E2625 p.a. Cost-of-living allowance approximately £E140 p.a. Outfit allowance £50. Passages for appointee and family on appointment, termination and annual leave. Appointment on contract 3–7 years (renewable) with bonus on completion (1 months salary for each year of service). Terms and conditions of service at present under review.

Candidates for these posts may apply for secondment from the National Health Service for a period of up to 3 years under the terms of circular letter No. NHB/(52) 106EG/(52)101 of 30th September, 1952.

Detailed applications (8 copies), naming 3 referees, to be received as soon as possible by Secretary, Inter-University Council for Higher Education Overseas, 29, Woburn-square, London, W.C.1, from whom further information may be obtained.

Hospital Services : Senior Appointments

NATIONAL HOSPITALS FOR NERVOUS DISEASES. The Board of Governors invites applications for the appointment of ASSISTANT PHYSICIAN to the Department of Psychological Medicine (Consultant status), at the Maida Vale Hospital for Nervous Diseases, Maida Vale, W.9. Applicants should possess a higher medical qualification. The appointment will be part-time and the successful applicant will be required to attend 4 half-days per week.

Applications (35 copies), giving the names of 3 referees, must be sent to the undersigned not later than 28th April, 1956.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

Maximum Part-time CONSULTANT PHYSICIAN to Chelmsford Group of hospitals. Duties will include acute work and the care of geriatric patients. Residence in Group area is a condition of appointment. Further particulars on application.

Part-time CONSULTANT PHYSICIAN to Whipps Cross Hospital, E.11 (5 sessions a week).

Part-time CONSULTANT PHYSICIAN to Prince of Wales's and St. Ann's General Hospitals, N.15 (and other hospitals in Tottenham Group as required), for 4 sessions a week.

Separate applications (6 copies), and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 21st April.

LUTON AND DUNSTABLE HOSPITAL, Luton. Locum CONSULTANT SURGEON, either full-time or maximum sessions required as from 1st May, 1956, probably for a period of 3 months.

Applications should be sent to the undersigned as soon as possible. R. E. LINGARD,

Luton and Hitchin Group Hospital Management Committee.

St. Mary's Hospital, Luton.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Maximum Part-time Additional CONSULTANT TRAUMATIC AND ORTHOPÆDIC SURGEON, Blackpool and Fylde Group of Hospitals (mainly Victoria Hospital, Blackpool). Wide experience essential, appointee to live in or near Blackpool. 16th April, 1956.

(*b*) 2 Part-time CONSULTANT PÆDIATRICIANS (each 8 half-days weekly) for :—

(i) Blackpool and Fylde Group of hospitals (mainly Victoria Hospital, Blackpool).

(ii) Wigan and Leigh Group of hospitals (Royal Albert Edward Infirmary, Wigan ; Astley Hospital, Leigh ; Billinge Hospital, &c.).

Wide experience and higher qualifications essential, appointees to live near main hospitals. 20th April, 1956.

(*c*) Maximum Part-time CONSULTANT ANÆSTHETIST to the Bolton and District Hospital Centre (Bolton Royal Infirmary, 237 Beds ; Bolton District General Hospital, 604 Beds, &c.). Wide experience and higher qualifications essential, appointee to live in area. 24th April, 1956.

(*d*) Whole-time or maximum Part-time CONSULTANT GROUP RADIOLOGIST to the Bolton and District Group of hospitals (Bolton Royal Infirmary, &c.). Wide experience and higher qualifications essential. To live in or near Bolton. 25th April, 1956.

(*e*) Whole-time NON-RESIDENT ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) to the Stockport and Buxton Group of hospitals (Stockport Infirmary, &c.) and possibly with some duties in the Macclesfield and District Group of hospitals. Good experience and higher qualifications essential. 30th April, 1956.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by the dates stated.

ROMFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer or Registrar grade) required at the Ingrebourne Centre, St. George's Hospital, Hornchurch, for some months. Wide experience in psychiatry and psychotherapy and preferably also some experience of child guidance.

Applications, with names of 3 referees, to the Group Secretary, Oldchurch Hospital, Romford, from whom further particulars can be obtained.

SHEFFIELD REGIONAL HOSPITAL BOARD. CONSULTANT PHYSICIAN (maximum part-time) required for hospitals in the Rotherham and Barnsley Areas.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 5th May, 1956.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments :—

Whole-time ASSISTANT ANÆSTHETIST based at the Royal Infirmary, Stirling. Salary (at age 32 and over) on the scale £1500–£50–£1950.

Whole-time ASSISTANT PSYCHIATRIST based at Bellsdyke Mental Hospital, Larbert. Salary (at age 32 and over) on the scale £1500–£50–£1950. House available.

Whole-time ASSISTANT PSYCHIATRIST based at Hartwood Mental Hospital, Shotts, Lanarkshire. Salary (at age 32 and over) on the scale £1500–£50–£1950.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

CANADA. UNIVERSITY OF ALBERTA HOSPITAL, EDMONTON, CANADA, requires ANÆSTHETIST. Starting salary for individual with 2 years postgraduate training $7350 p.a., D.A. $8350 p.a. 3 annual increments of $500 after Canadian certification obtained. Generous provision for sick benefits, vacation and pension. Transportation loan available if desired.

Apply giving references, photograph, first letter to the Medical Superintendent.

SOUTH AUSTRALIA : INSTITUTE OF MEDICAL AND VETERINARY SCIENCE. ASSISTANT MEDICAL BACTERIOLOGIST. Applications are invited from medical graduates for this appointment in clinical bacteriology. The laboratories, which are modern and well equipped, serve the Royal Adelaide Hospital and other hospitals and institutions. There are opportunities for some research and for special investigations. The salary offered is within the range £1750–£2150, according to experience. Alternative schemes for superannuation are available. Within 2 years the Medical Bacteriologist will be due to retire (salary range £2150–£2600).

The Director of the Institute will be in London during April and May and will be available to give full particulars of conditions of service to those interested. Inquiries for an interview or further written information should be addressed to the Agent General for South Australia, South Australia House, Marble Arch, London, W.1.

Hospital Services : Junior Appointments

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (Acute 309 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pathology), resident or non-resident, for area laboratory at this Hospital. The successful candidate will be expected when necessary to work in other hospitals in the Group under the supervision of the area Pathologist.

Applications, stating age, nationality, experience, and qualifications, with copies of 3 recent testimonials, to the Hospital Secretary, by 19th April, 1956.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. HOUSE SURGEON (resident), vacant 4th May, 1956. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary enclosing copies of 3 recent testimonials.

GERMAN HOSPITAL, London, E.8. (General—157 Beds.) Applications are invited for the 6-months resident appointment (now vacant) of Pre-registration HOUSE SURGEON and should be sent immediately to Group Secretary, Hackney Hospital, London, E.9, quoting GH/PHS.

GROUP PATHOLOGICAL LABORATORY, ST. MARY ABBOTS HOSPITAL, Marloes-road, Kensington, W.8. FULHAM AND KENSINGTON AND CHELSEA HOSPITAL MANAGEMENT COMMITTEES. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment at above Laboratory as REGISTRAR (pathology), vacant 4th June, 1956. Candidates will be required to work at the Group Laboratory and as required at any other hospital in either of the 2 Groups. Candidates may visit the Laboratory by arrangement with the Director of Pathology.

Applications (5 copies) to be submitted by 13th April, 1956, on forms obtainable from, and returnable to, the Group Secretary, (L.44), Fulham and Kensington Hospital Management Committee, 5, Collingham-gardens, London, S.W.5.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications from registered practitioners for the 6 months resident appointment of CASUALTY OFFICER AND E.N.T. HOUSE SURGEON (House Officer grade), should be sent immediately to Secretary, above address, quoting HH/CHO.

LAMBETH HOSPITAL, Brook-drive, S.E.11. South West METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the post of SURGICAL REGISTRAR. The appointment is normally for 2 years but is subject to review at the end of 1 year. It is recognised for the F.R.C.S. The duties comprise general surgery, orthopædics and E.N.T. The post is resident or non-resident, but if the latter the successful applicant will be required to sleep in on nights on duty. Canvassing will disqualify but candidates are not precluded from visiting the Hospital if they so desire.

Forms of application (enclosing stamped addressed envelope) from the Secretary of the Hospital, to whom all applications should be returned by 21st April, 1956.

MILE END HOSPITAL, Bancroft-road, London, E.1. (475 Beds.) HOUSE PHYSICIAN (pre- or post-registration) post vacant 23rd April, 1956.

Application forms, obtainable from the Physician-Superintendent, should be returned by 13th April, 1956, with copies of not more than 3 testimonials.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies occur 1st June, 1956, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts graded as House Officer. Duties include work in the Outpatient Department and Refill Clinic as well as in wards.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 17th April.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy) required in April.

Applications, with copies of testimonials, to the Administrative Officer.

METROPOLITAN EAR, NOSE AND THROAT HOS-PITAL, at St. Mary Abbots Hospital, Kensington, W.8. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (E.N.T.) required, 3rd May, 1956. Post recognised for D.L.O. Resident appointment for 6 months in the first instance.

Applications by 16th April, 1956, on forms obtainable from the Hospital Secretary (L.45), St. Mary Abbots Hospital.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of SENIOR REGISTRAR in the Department of X-ray Diagnosis.

Forms of application, obtainable from Deputy Superintendent, should be submitted, naming 2 referees, by 30th April.

MOORFIELDS WESTMINSTER AND CENTRAL EYE HOSPITAL (MOORFIELDS BRANCH), City-road, London, E.C.1. Applications are invited for the post of SIXTH HOUSE SURGEON (Registrar), non-resident. The appointment is for a period of 4 months from 1st July, 1956, and the holder of the post at the completion of that time will be eligible for appointment as Fifth, Fourth, Third, Second House Surgeon and subsequently as Senior Resident Officer, for similar periods.

Applications should be submitted on the official form obtainable from the undersigned, stating age and qualifications, together with testimonials and photograph, and be received not later than 21st April, 1956.

A. J. M. TARRANT, House Governor.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of ASSISTANT REGISTRAR (whole-time) to the Outpatients' Department at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. The appointment will be for 1 year in the first instance.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 14th April, 1956.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

NEW ADVERTISEMENT—revised closing date

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (whole-time) in the Department of Applied Electro-Physiology at The National Hospital, Queen-square, W.C.1. This post carries the grade of Registrar. The appointment will be for 1 year in the first instance with eligibility for reappointment.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 14th April, 1956.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of ASSISTANT HOUSE PHYSICIAN (non-resident) at The National Hospital, Queen-square. The post carries the grade of Senior House Officer. The appointment will be for 6 months.

Applications, with names of 3 referees, to be sent to the undersigned not later than 14th April, 1956.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Neurology. Applications are invited for the post of RESIDENT HOUSE PHYSICIAN at Maida Vale Hospital for Nervous Diseases, London, W.9. Grading as Senior House Officer or Registrar, according to experience. Appointment for 6 months, renewable. Preference will be given to a candidate holding a higher degree.

Applications, with copies of 3 recent testimonials, should be addressed to the Secretary, at Maida Vale Hospital, W.9, by 21st April, 1956.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD AND BOARD OF GOVERNORS OF THE LONDON HOSPITAL, E.1. SENIOR REGISTRAR in Psychiatry required under Joint Training Scheme. First year in Psychiatric Unit of 24 observation beds and 36 beds for treatment of neuroses and early psychoses at St. Clement's Hospital, Bow-road, E.3. (Resident or non-resident.) The Unit is run in conjunction with The London and Claybury Hospitals. Subsequent service at Runwell Hospital, near Wickford, Essex, and The London Hospital. Appointment subject to annual review.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 21st April.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. QUEEN CHARLOTTE'S MATERNITY HOSPITAL. JUNIOR OBSTETRIC OFFICER (Senior House Officer). Resident posts tenable for 6 months from 1st July, 1956.

Applications to the Secretary to the Board of Governors by 17th April, 1956, on forms obtainable from 339, Goldhawk-road, London, W.6.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD.

SURGICAL REGISTRAR (resident), Tilbury and Riverside General Hospital, Tilbury Branch, Tilbury, Essex. Post recognised for F.R.C.S., offers excellent training in general surgery (74 acute beds and active Outpatient Department), E.N.T. and gynæcology.

SURGICAL REGISTRAR (resident), Victoria Hospital, Romford, Essex.

NEUROSURGICAL REGISTRAR (resident or non-resident), Oldchurch Hospital, Romford, Essex. Recognised for F.R.C.S. Department offers excellent opportunities for training and experience.

ORTHOPÆDIC REGISTRAR (resident), St. Andrew's Hospital, Billericay, Essex. Post recognised for F.R.C.S., offers exceptional experience in fracture, traumatic, and general surgery and casualty work.

MEDICAL REGISTRAR (resident or non-resident, sleeping in on duty nights), Hackney Hospital, Homerton High-street, E.9.

Appointments subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 21st April, 1956.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. Applications are invited from registered medical practitioners for the post of RESIDENT PÆDIATRIC HOUSE PHYSICIAN (third post) for a period of 6 months from 10th May, 1956. (Post recognised for D.C.H.)

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 14th April, 1956.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (general surgery), resident.

Application forms from the Group Secretary, St. Luke's Hospital, Sydney-street, Chelsea, S.W.3. (Enclose foolscap stamped addressed envelope.)

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SENIOR MEDICAL REGISTRAR to work at the Hampstead General Hospital. Candidates should be registered medical practitioners and members of the Royal College of Physicians. The appointment is for 1 year in the first instance commencing 1st June, 1956.

Applications, together with names of 3 referees, to be sent to the Secretary, Hampstead General Hospital, Haverstock Hill, N.W., by 18th April, 1956.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. House PHYSICIAN (post or pre-registration) required 9th May, 1956.

Applications, with copies of recent testimonials, to be sent to the Hospital Secretary by 17th April, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Anæsthetics to fill a vacancy in the approved trainee establishment at the Lewisham Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st April, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Obstetrics and Gynæcology to fill a vacancy in the approved trainee establishment in the Woolwich Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 21st April, 1956.

SOUTH WESTERN HOSPITAL, Landor-road, Stockwell, S.W.9. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR required. The successful applicant will be required to take charge of the acute Medical Unit (32 Beds) at the Hospital, which unit is under the control of the Consultant Physician from Lambeth Hospital. In addition, his responsibilities will include work in connection with some tuberculosis and infectious diseases beds at the Hospital. The appointment is normally for 2 years, and is subject to review at the end of the first year. Canvassing will disqualify but candidates are not precluded from visiting the Hospital if they so desire.

For the form of application apply (enclosing a stamped addressed envelope) to the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom completed applications should be returned not later than 21st April, 1956.

ST. ANDREW'S HOSPITAL, Bow, E.3. Applications are invited for the post of HOUSE PHYSICIAN (recognised pre-registration post), vacant on 28th April. Post is tenable for 6 months.

Applications, stating age and qualifications, with copies of at least 1 testimonial, should be sent immediately to the Hospital Secretary, St. Andrew's Hospital, Bow, E.3.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited to fill the post of SENIOR HOUSE OFFICER (tuberculosis), commencing 1st May, 1956.

Applications, stating age, qualifications, experience, &c., together with names and addresses of 2 referees, to be forwarded to Hospital Secretary by 16th April, 1956.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited to fill the post of HOUSE PHYSICIAN (pædiatrics), commencing 1st May, 1956.

Applications, stating age, qualifications, experience, &c., together with names and addresses of 2 referees, to be forwarded to Hospital Secretary by 16th April, 1956.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited to fill the post of SENIOR HOUSE OFFICER (orthopædic, ophthalmology, plastics, E.N.T., &c.), commencing 1st May, 1956.

Applications, stating age, qualifications, experience, &c., together with names and addresses of 2 referees, to be forwarded to Hospital Secretary by 16th April, 1956.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited for the post of REGISTRAR to the Diagnostic Radiological Department; possession of the Diploma in Radiology is essential. The appointment is for a first period of 12 months, as from a date to be arranged; remuneration to be at Registrar rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 30th April, 1956.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House SURGEON (obstetric and gynæcology), second post, resident. Vacancy late May. Post recognised for D.Obst.R.C.O.G., but not for M.R.C.O.G.

Applications, naming 2 referees, to Medical Superintendent, within 14 days.

ST. THOMAS'S HOSPITAL, London, S.E.1. Obstetric HOUSE PHYSICIAN at the General Lying-in Hospital, York-road, S.E.1, for 6 months from 3rd July, 1956. Resident. Approved service for M.R.C.O.G.

Applications, naming 2 referees, to the Clerk of the Governors by 21st April, 1956.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. Applications are invited for the post of SURGICAL REGISTRAR, falling vacant on 15th May, 1956. The appointment is whole-time, non-resident, and is graded as that of a Senior Registrar.

Full particulars and form of application, which must be returned not later than Monday, 16th April, 1956, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for the following Senior House Officers on 15th July, 1956:—

2 HOUSE PHYSICIANS.
2 HOUSE SURGEONS.

Further particulars and form of application, which must be returned not later than Monday, 7th May, 1956, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 15th July, 1956, for a JUNIOR RESIDENT ANÆSTHETIST (Senior House Officer).

Full particulars, with form of application, which must be returned not later than Monday, 7th May, 1956, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WANSTEAD HOSPITAL, Hermon Hill, London, E.11. (191 Beds.) HOUSE SURGEON required, recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee Forest Group, Langthorne-road, E.11.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. HOUSE SURGEON (general and gynæcological) required 28th April. Pre-registration candidates considered.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary by 14th April.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SURGICAL REGISTRAR for 1 year in first instance to start immediately.

Applications (6 copies), with names of 2 referees, to House Governor by 21st April.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of Locum Tenens SURGICAL REGISTRAR to start immediately.

Applications (6 copies), with names of 2 referees, to House Governor by 14th April.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT SURGICAL REGISTRAR required at above Hospital. Post vacant 6th June, 1956. Post is recognised for surgical training for Final Fellowship examination

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 17th April, 1956.

BEDFORD GENERAL HOSP'TAL, Kimbolton-road. (437 Beds.) Locum HOUSE SURGEON (mainly orthopædic) required immediately. Salary £9 10s. per week.

Applications, with 2 testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (437 Beds.) 2 Pre-registration HOUSE SURGEONS required (1 immediately and 1 mid-May). The appointments offer exceptional opportunities for general experience in busy acute surgical units.

Detailed applications, with copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of REGISTRAR in Orthopædic Surgery at the Aberdeen Royal Infirmary. The post is a whole-time one and is non-resident. Salary and conditions of service in accordance with the terms issued by the Department of Health for Scotland.

Applications, giving details of qualifications and experience, with the names of 2 referees, should be lodged with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ASHFORD HOSPITAL, Ashford, Middlesex. Required, RESIDENT HOUSE SURGECN (Male) for Traumatic and Orthopædic Unit. Preference given to pre-registration candidates.

Applications, stating age, qualifications and experience with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

ASHFORD HOSPITAL, Ashford. Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for Special Departments (E.N.T., pædiatric, dermatology, &c.). 6 months appointment. Not suitable for pre-registration candidates; offers good experience before general practice.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

BARROW-IN-FURNESS. NORTH LONSDALE HOS-PITAL. Applications are invited for a resident post of HOUSE SURGEON (recognised for pre-registration) at the above Hospital, with surgical work under control of Consultant Surgeons. Post recognised for F.R.C.S. National conditions and salary scale.

Applications to the Group Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness.

BATH CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners in general practice for the appointment of CLINICAL ASSISTANT to undertake 1 weekly session in obstetrics and gynæcology. The successful candidate will work under the general direction of the Visiting Consultant Obstetrician and Gynæcologist at Trowbridge and Bradford-on-Avon Hospitals. The duties may include outpatient and operative work and emergencies. Previous experience in obstetrics and gynæcology is essential. Payment will be at the rate of £175 p.a. per weekly 3½-hour session. The post is tenable for 2 years but is subject to review at the end of the first year.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 21st April, 1956.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) ORTHOPÆDIC HOUSE SURGEON (first, second or third post). Married accommodation available. Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S. Vacant mid-May.

Apply to Group Secretary.

BIRMINGHAM, 9. LITTLE BROMWICH GENERAL HOSPITAL. RESIDENT MEDICAL OFFICER in Infectious Diseases (Senior House Officer grade). Residential charge—£157 p.a. Hospital serves a wide area and gives opportunities for the study of infectious diseases. Part of Hospital being developed as a General Hospital, where further experience can be gained.

Apply Physician-Superintendent.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Senior House Officer), vacant 20th June, 1956, for 1 year. Main duty to take charge of Infants Block (60 Cots). Previous hospital experience of diseases of infancy is desirable and preference will be given to candidates holding the M.R.C.P.

Forms of application may be obtained from the House Governor and should be returned by 30th April, 1956.

G. A. PHALP, Secretary to the Board of Governors.

BRISTOL MENTAL HOSPITAL MANAGEMENT COM-MITTEE. BARROW AND FISHPONDS HOSPITALS. Applications invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER. Experience in general medicine or neurology an advantage. The Group includes Modern Admission Units, Neurosis Centre, and Day Hospital, with Departments of Applied Psychology, Electro-encephalography, and Biochemical Research. The appointment offers opportunities for experience in many aspects of acute and chronic psychiatric illness.

Applications, giving details of experience, and names of 3 referees, should be sent to the Medical Superintendent, Barrow Hospital, Barrow Gurney, near Bristol.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in General Surgery. The appointment will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Weston-super-Mare General Hospital but may be required to undertake duties at other hospitals in the Group. The post is recognised for the F.R.C.S.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 21st April, 1956.

BRISTOL. COSSHAM AND FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON in General Surgery required at Cossham Memorial Hospital, Kingswood, Bristol, for period 21st April–31st July, 1956. 88 Beds acute medicine and surgery. Recognised pre-registration post but fully registered practitioners considered.

Apply to Group Secretary, Frenchay Hospital, Bristol, quoting qualifications, experience and names of 2 referees.

BRISTOL (near). HAM GREEN HOSPITAL, Pill, BRISTOL. Applications are invited for the post of SENIOR HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis including regular major thoracic surgery. Appointment for 1 year renewable.

Apply Secretary, Ham Green Hospital, Pill, near Bristol.

BRIGHTON GENERAL HOSPITAL. House Surgeon (orthopædics). This post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton.

BRIGHTON GENERAL HOSPITAL. Casualty Medical OFFICER (for casualty and general duties), House Officer grade.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton, as soon as possible.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.)

2 CASUALTY HOUSE SURGEONS. Duties include work in Orthopædic and Traumatic Unit. Vacant mid-April and end May.

3 HOUSE SURGEONS, vacant (including gynæcology) mid-April, beginning and mid-May.

All posts recognised for pre-registration and F.R.C.S.

2 HOUSE PHYSICIANS (pre-registration), vacant beginning May and June.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BLACKBURN (near). CALDERSTONES HOSPITAL, WHALLEY, near BLACKBURN, LANCASHIRE. (For Mental Defectives —2378 Beds.) CALDERSTONES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER. Salary £17 10s. per week. Unfurnished flat available for rent to married man. Residential quarters available for single man. No previous experience of mental diseases or mental deficiency necessary. This post would give valuable experience to practitioners who have the necessary 1 years experience after full registration and who are proposing to take up public health appointments and to study for the D.P.H. or D.P.M.

Applications, stating age, qualifications and experience, together with the names and addresses of 3 referees, to be submitted to the Medical Superintendent, Calderstones Hospital, Whalley, near Blackburn, as soon as possible.

BLACKBURN. ROYAL INFIRMARY. (262 general beds.) HOUSE SURGEONS (2) required 23rd April and 1st May, 1956. Posts recognised for F.R.C.S. and approved for pre-registration purposes.

Applications to Secretary, Blackburn and District Hospital Management Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. THE ROYAL INFIRMARY, BOLTON (237 Beds), BOLTON DISTRICT GENERAL HOSPITAL (604 Beds). RESIDENT HOUSE SURGEONS (2) for general surgical duties, 1 for each of above Hospitals. Vacant mid-May, tenable for 6 months and recognised under Pre-registration Service Scheme. Also recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. Applications are invited for the post of Pre-registration HOUSE OFFICER in General Surgery.

Apply, stating age, qualifications, &c., to—
H. WILKINSON, Group Secretary.
Bury General Hospital, Bury, Lancs.

CARLISLE. CUMBERLAND INFIRMARY. (340 Beds.) Applications are invited for the following appointments :—

(i) SENIOR HOUSE OFFICER (orthopædics).
(ii) SENIOR HOUSE OFFICER ("Specials"—i.e., E.N.T. and Eyes).

Applications, giving 2 names for reference purposes, should be sent to the Group Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 818 Beds.) Whole-time REGISTRAR required for Surgical and Orthopædic duties. Position vacant at the end of May. Applicants are invited to visit the Hospital by appointment with the Physician-Superintendent.

Applications, on forms obtainable from the Group Secretary, should be submitted by 14th April, 1956.

CHESTERFIELD ROYAL HOSPITAL. (257 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th April, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). Post vacant now and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD. ST. JOHN'S HOSPITAL. House PHYSICIAN (pre-registration, first, second or third appointment). Male or Female, to commence as soon as possible.

Applications, stating age, nationality, qualifications, and experience, together with recent testimonials, to the Secretary, Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (psychiatry). This modern mental deficiency hospital of 1550 Beds provides full facilities for patients of all grades. Recognised for 12 months of the 2-year qualifying period for D.P.M. Opportunity of experience at nearby mental hospitals and child guidance clinic. Accommodation available for single person.

Application forms obtainable from the Secretary to the Hospital Management Committee.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required from 18th April, 1956. Senior House Officer or House Officer (intern.) grade. Post recognised for F.R.C.S. and Pre-registration Service. Preference given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

COLCHESTER HOSPITAL MANAGEMENT COM-MITTEE. Applications are invited for :—

Essex County Hospital, Colchester (188 Beds)
SENIOR HOUSE OFFICER (casualty and E.N.T.).
SENIOR HOUSE OFFICER (casualty and radiotherapy).

Posts recognised for F.R.C.S. ; tenable for 6 months or 1 year.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

CROYDON GENERAL HOSPITAL. (200 Beds.) House SURGEON (pre-registration) required as from 1st May, 1956. Post recognised for F.R.C.S.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London Road, Croydon, to be returned immediately.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX. RESIDENT JUNIOR HOUSE SURGEON appointment now vacant. Pre-registration post. Health Service terms and conditions.

Applications, stating age, nationality, qualifications and experience, with names of 2 referees, to the Group Secretary, Mid Sussex Hospital Management Committee, as soon as possible.

DARLINGTON (near). AYCLIFFE HOSPITAL FOR MENTAL DEFECTIVES, HEIGHINGTON, near DARLINGTON, CO. DURHAM. Locum JUNIOR HOSPITAL MEDICAL OFFICER required from 1st to 30th June, 1956, at the above Hospital. Salary £17 10s. per week less an amount of £3 per week in respect of residential accommodation.

Applications to the Medical Superintendent.
T. H. ALLAN, Group Secretary.

DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER. This is a joint post between Hundens Unit (a hospital of special departments) serving E.N.T., ophthalmic, infectious diseases and chest, and East Haven (geriatrics). Good experience with responsibility for suitable candidate. Post is resident at Hundens Unit (single accommodation). Term of service is for a maximum of 4 years with option of reappointment. Salary £775–£50–£1075 p.a.

Applications should be sent forthwith, giving full particulars and 3 names for reference, to the Group Secretary, Darlington Memorial Hospital.

DEVIZES, WILTSHIRE. ROUNDWAY HOSPITAL. (For Nervous and Mental Diseases—1334 Beds.) Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER for duty at the above Mental Hospital. All forms of modern treatment available, including Insulin Unit and outpatient clinics at 3 General Hospitals. Salary, £775 p.a., rising by £50 to £1075 p.a. Accommodation for a single man for which £150 p.a. will be charged, or furnished house for a married man available at a rent of £3 per week plus rates.

Applications, giving names and addresses of 2 referees, to the Medical Superintendent as soon as possible.

DONCASTER. WESTERN HOSPITAL. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER in the grade of Junior Hospital Medical Officer.

Applications, stating age, qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded to the Group Secretary, Doncaster Hospital Management Committee, Doncaster Royal Infirmary.

DONCASTER HOSPITAL MANAGEMENT COM-MITTEE. HAMILTON ANNEXE, WESTERN HOSPITAL. (Recognised under the Regulations for the D.Obst.R.C.O.G. and M.R.C.O.G. (obstetrical experience) and approved for Pre-registration Service under the Medical Act, 1950.) Applications are invited for the post of OBSTETRICAL HOUSE OFFICER (Senior House Officer or pre-registration post), vacant early May.

Applications should be forwarded to the Group Secretary at Doncaster Royal Infirmary by 20th April.

DONCASTER HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (Senior House Officer) required between Western Hospital, Doncaster, and Doncaster Royal Infirmary. Resident at Western Hospital.

Applications to the Group Secretary at Doncaster Royal Infirmary.

DORKING GENERAL HOSPITAL, Horsham-road, DORKING. Applications are invited for the post of SENIOR HOUSE OFFICER (general surgery, orthopædics and E.N.T.), vacant middle of May, 1956.

Apply, with copies of 2 recent testimonials, to Medical Superintendent.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Guest Hospital (154 Beds)

SENIOR HOUSE OFFICER (surgical). Post now vacant.
SENIOR HOUSE OFFICER (casualty). Post now vacant.
SENIOR HOUSE OFFICER (anæsthetics). Post vacant April.

Apply, Group Secretary, Guest Hospital, Dudley.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) SENIOR SURGICAL REGISTRAR, Ipswich and East Suffolk Hospital. Trainee post. Higher qualification desirable. Hospital recognised for F.R.C.S. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary, Ipswich and East Suffolk Hospital (Anglesea Road Wing), Ipswich.

(2) REGISTRAR in Geriatrics, Norfolk and Norwich Group of Hospitals (total geriatric beds 590). Main hospital is the West Norwich Hospital where the Geriatric Department is the pivotal point of the area service which is being developed on active lines under the Consultant Physician in Geriatrics. Appointment for 1 year, renewable for second year. Candidates invited to visit hospital by direct arrangement with Hospital Management Secretary, Norfolk and Norwich Hospital.

Applications, stating age, experience, and the names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 16th April, 1956.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. PÆDIATRIC REGISTRAR, Peterborough Area. Main hospital Peterborough Memorial, other hospitals at Stamford and Wisbech. Duties include care of the newborn. Post provides wide experience and training. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 23rd April, 1956. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Memorial Hospital, Peterborough.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. Locum CASUALTY REGISTRAR required immediately for 3 weeks at above Hospital.

Apply to Medical Director (Telephone EDGware 2381).

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. 2 RESIDENT HOUSE SURGEONS for above Hospital. Posts vacant 3rd May, 1956. 6 months appointments. Posts recognised for F.R.C.S. and pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 14th April, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for above Hospital. Post vacant 25th April, 1956. 6 months appointment. Post recognised for M.R.C.O.G. purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 14th April, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT OBSTETRIC HOUSE SURGEON for above Hospital. Post vacant 5th May, 1956. 6 months appointment. Post recognised for M.R.C.O.G. purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 14th April, 1956.

EDGWARE GENERAL HOSPITAL. (715 Beds.) Resident SENIOR HOUSE OFFICER in Pathology required at above Hospital. Post vacant mid-April, 1956. Salary £745 p.a. Deduction of £155 p.a. for board, lodging, &c.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, to Group Secretary, Edgware General Hospital, Edgware, Middlesex, by 11th April, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT SENIOR CASUALTY HOUSE OFFICER required at above Hospital. Post vacant early June, 1956. Salary £745 p.a. Deduction of £155 p.a. for board-residence, &c.

Apply, stating age, nationality, qualifications and experience, together with names and addresses of 2 referees, to Group Secretary, Edgware General Hospital, by 21st April, 1956.

GRIMSBY GENERAL HOSPITAL. Grimsby Hospital MANAGEMENT COMMITTEE. Applications are invited for the post now vacant of Locum JUNIOR HOSPITAL MEDICAL OFFICER (orthopædic). Orthopædic Unit of 84 Beds. Up-to-date Medical Library and reading facilities available.

Applications, with names of 2 referees, to Hospital Secretary.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (orthopædics) required. The post is recognised to the extent of 6 months for the F.R.C.S. and the Hospital has an excellent reference library.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th April, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from registered medical practitioners, Male or Female, for the appointment of SENIOR HOUSE OFFICER in Clinical Pathology (resident), vacant 1st May, 1956 (or as soon as possible thereafter). The successful candidate will be responsible for emergency pathological and blood-transfusion duties, and will work, under the Area Pathologist, in different branches of clinical pathology.

Applications, with names of 2 referees, to the Hospital Secretary by 21st April, 1956.

GREENOCK AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. GREENOCK ROYAL INFIRMARY. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (general surgery). The appointment will be subject to the National Health Service (Scotland) superannuation regulations.

Applications, giving details of age, experience, and qualifications, together with copies of 3 testimonials, should be forwarded to the Secretary and Treasurer at Headquarters, 47, Eldon-street, Greenock, not later than 16th April, 1956.

GLASGOW ROYAL INFIRMARY. Junior Hospital MEDICAL OFFICER in Surgery.

Apply in writing not later than 14th April, 1956, giving 3 names for reference, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

HASLEMERE AND DISTRICT HOSPITAL. (82 Beds.) GUILDFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (Locum considered). Pre-registration post but registered medical practitioners invited to apply. Surgical with charge of 12 medical beds. Valuable experience in general and emergency surgery, orthopædic, E.N.T., gynæcological, children and casualty work.

Apply immediately to Hospital Secretary, Haslemere and District Hospital, Haslemere, Surrey.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) 2 HOUSE SURGEONS required. Pre-registration posts, vacant now. National scale of salary.

Apply to Hospital Administrator.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HOUSE SURGEON (Female) required to commence duty immediately. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HOUSE SURGEON to the Gynæcological and Abnormal Maternity Department, required to commence duties on 16th April, 1956. The post is recognised for the D.Obst.R.C.O.G. and is a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD. ST. LUKE'S HOSPITAL. (252 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital, to commence duties immediately. The Hospital caters for chronic sick, children, maternity and acute medical and surgical patients. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs, £745 p.a. with appropriate deduction in respect of residential emoluments.

Applications, together with copies of 3 recent testimonials, to be sent to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD. ST. LUKE'S HOSPITAL. (252 Beds.) Applications are invited for the post of RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer grade) at the above Hospital, to commence duties immediately. The Hospital caters for chronic sick, children, maternity and acute medical and surgical patients. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs, £775–£50–£1075.

Applications, together with copies of 3 recent testimonials, to be sent to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON. This post includes gynæcology, E.N.T., and general surgery. Pre-registration post. Vacant 1st May.

Applications, giving full details, and copies of 2 recent testimonials, to the Hospital Secretary.

KEIGHLEY, YORKSHIRE. ST. JOHN'S HOSPITAL. (197 Beds chronic sick. 24-Bed Maternity Unit.) Applications are invited from medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (candidates eligible not less than 1 year after full registration), with possibly, in addition, some duties at Keighley and District Victoria Hospital, a general hospital of 139 Beds. Appointment vacant 1st May next. Appointment initially for 1 year. Salary according to scale £775–£50–£1075 p.a., less deductions for board and lodging, &c. Accommodation available for married officer at St. John's Hospital.

Applications, stating age, experience, qualifications and nationality, and the names and addresses of 3 referees, to be sent to Group Secretary, Hospital Management Committee, 17, St. John's Hospital, Keighley.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (Geriatric Unit) whole-time, non-resident, vacant 23rd April, 1956. The Geriatric Unit is an integral part of Hospital. Offers excellent clinical experience in diseases of the elderly (acute and long-term, domiciliary visiting and outpatient clinics). Successful candidate will work under direction of whole-time Consultant Physician, and Hospital has facilities for full investigations.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 17th April, 1956.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (non-resident except on duty nights), vacant May, 1956. Possession of D.A. desirable. Recognised for F.F.A.R.C.S. Department comprises 3 teams and every kind of surgical work is carried out except thoracic and neurosurgery. Post includes work at neighbouring hospitals.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 18th April, 1956.

LANCASTER. ROYAL LANCASTER INFIRMARY. (240 Beds.) RESIDENT HOUSE SURGEON (pre-registration). Successful applicant will work with Consultant Surgical Unit and attend consultative clinics. Post recognised for F.R.C.S.

Applications, with names of 2 referees, to Secretary, Royal Lancaster Infirmary, Lancaster.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

Halifax Group (approximately 280 Beds in the surgical specialties). Resident.

General Medicine

Regional Rheumatism Centre, Harrogate (240 Beds. 9 sessions), and Rheumatism Clinic, General Infirmary at Leeds (2 sessions). Resident at the Royal Bath Hospital, Harrogate.

Ophthalmology

Huddersfield Group (22 eye beds and 1800 new outpatients annually). Non-resident.

Pædiatrics

(*a*) Huddersfield and Halifax Groups (aggregate of 60 acute pædiatric beds). Non-resident.

(*b*) Bradford A and B Groups. Duties mainly at Children's Hospital (100 Beds). Resident.

Psychiatry

(*a*) Clifton Hospital, York (1100 Beds). Resident or non-resident.

(*b*) Menston Hospital, near Leeds (2500 Beds). Resident.

(*c*) Meanwood Park Hospital (Mental Deficiency), Leeds (700 Beds). Accommodation available for single person.

If desired, facilities for attendance at the Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments, with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 19th April, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. SENIOR HOUSE OFFICER in Anæsthetics required for a period of 6 months from 1st May, 1956. The appointment will be renewable for a further period of 6 months. Terms and conditions of service for hospital medical staff apply.

Applications, giving full details of qualifications and previous posts held, together with 3 names for reference, should be sent to the Secretary to the Board, General Infirmary, Leeds, 1, as soon as possible.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. SENIOR HOUSE OFFICER in Neurosurgery required for a period of 6 months from 1st May, 1956. The appointment will be renewable for a further period of 6 months. Terms and conditions of service for hospital medical staff apply.

Applications, giving details of age, qualifications, posts held with dates, and with 3 names for reference, should be sent to the Secretary to the Board as soon as possible.

LINCOLN. HARMSTON HALL HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (resident) required for group of mental deficiency hospitals in Lincolnshire (943 Beds). Salary scale £775–£50–£1075 with national terms and conditions of service. Travelling expenses as approved. Furnished apartments charged at £160 p.a.

Applications, with full details of age, education, qualifications, previous appointments with dates, and 2 names for reference, to be sent to the Group Secretary, Harmston Hall, Lincoln, within 10 days.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. (164 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER for work in the Surgical Unit of 75 Beds. The post offers excellent experience in general surgery and the Hospital is recognised under the F.R.C.S. regulations. The successful candidate will also be expected to participate in the general work of the Hospital.

Full particulars, stating age, experience, and qualifications, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

LIVERPOOL, 20. BOOTLE HOSPITAL. Applications are invited for the post of HOUSE SURGEON (general surgery) vacant now, in this busy hospital of 119 Beds. The post is recognised for Pre-registration Service.

Applications, stating age, experience, qualifications, and the names of 2 referees, should be sent to the Secretary, Walton Hospital, Liverpool, 9.

MACCLESFIELD HOSPITAL. West Park Branch. Applications invited for resident post of OBSTETRIC/GYNÆCOLOGICAL HOUSE OFFICER (pre-registration post), vacant 15th April, 1956. Post recognised for D.Obst. R.C.O.G. training; 28 obstetric, 30 gynæcological beds in unit.

Apply with testimonials immediately to Group Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant May, 1956. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £745 a year, less £150 a year for residential emoluments.

Applications immediately to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer). Recognised for F.R.C.S. Salary £745 a year, less £150 a year for board and lodging. Post vacant June, 1956.

Applications to the Administrative Officer at the Hospital.

MANCHESTER, 9. BOOTH HALL CHILDREN'S HOS-PITAL, BLACKLEY. MANCHESTER REGIONAL HOSPITAL BOARD. RESIDENT SURGICAL OFFICER (Registrar grade). Residential accommodation or flat available.

Applications, together with names of 2 referees, to be sent to Group Secretary (from whom further particulars may be obtained) as soon as possible.

MANCHESTER, 8. CRUMPSALL HOSPITAL. Applica-tions are invited for the post of REGISTRAR in Medicine (Resident Medical Officer). The clinical teaching of undergraduates takes place on the medical side of the Hospital.

Applications, with full details and names of 2 referees, by 16th April, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER REGIONAL HOSPITAL BOARD invites applications for the post of RESIDENT REGISTRAR in General Medicine to the Wigan and Leigh Group of hospitals with main duties at the Royal Albert Edward Infirmary, Wigan.

Applications to be received by 14th April, 1956, should be made to the Secretary, Wigan Infirmary, giving the names of 2 referees.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. WITHINGTON HOSPITAL, MANCHESTER, 20. The Board invite applications for the post of Locum MEDICAL REGISTRAR at the above Hospital.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded immediately to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Chest Diseases, the main duties to be with the Bury and Rossendale Hospital Management Committee, with duties at Chest Clinics and at Aitken Sanatorium and Peel Hall Pulmonary Hospital, and other hospitals in the area.

Apply, stating names of 2 referees, to—

H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics, vacant shortly. Applicants must have had previous hospital experience in general medicine and surgery, and in obstetrics. The post is recognised for purposes of the M.R.C.O.G. examination. The duties involve clinical responsibility for mothers and babies and supervision of the work of pre-registration House Officers is also included. The appointment is for 12 months. National scale.

Application forms may be obtained from the undersigned and returned not later than 21st April, 1956.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 1 NON-RESIDENT SECOND ASSISTANT CLINICAL PATHOLOGIST required, Senior House Officer grade. Post now vacant.

Application form from Secretary.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 2 HOUSE OFFICERS (general surgery) required, pre-registration. Posts recognised for F.R.C.S. examination. Posts vacant mid-April.

Forms from Secretary.

MARGATE. GENERAL HOSPITAL. (132 Beds.) Senior HOUSE OFFICER (surgical). Recognised for F.R.C.S. and D.A. Salary £745 p.a., less charge for residential emoluments.

Applications, with copies of testimonials, to Hospital Secretary.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maiden-HEAD. RESIDENT SURGICAL REGISTRAR required at above Hospital which may be visited by direct appointment.

Application forms from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 13th April.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required to work in the Pædiatric Section of the Maternity Unit of the Newcastle General Hospital. The appointment will be for 1 year commencing 1st May, 1956, or as soon thereafter as possible. The Maternity Unit of Newcastle General Hospital is a teaching department for medical students and pupil midwives, and the person appointed would work with the Consultant Pædiatrician. The post offers experience in the care of premature infants and other conditions affecting the newborn. It is linked with the Child Health Department of the University of Durham.

Applications, together with 1 copy of 2 testimonials, should be forwarded to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the non-resident appointment of SURGICAL REGISTRAR to the Ophthalmic Department of the Royal Victoria Infirmary. The post will offer scope to prepare for a higher degree. The appointment is for 1 year in the first instance and will be subject to Ministry of Health terms and conditions of service for hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWPORT, ISLE OF WIGHT. ST. MARY'S HOSPITAL. (346 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON. Post vacant now. Approved for Pre-registration Service, and recognised for F.R.C.S.

Applications, with names of 2 referees, to Hospital Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE SURGEONS (2) (pre-registration—first or second post) required as soon as possible for 6 months.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

PLYMOUTH. SCOTT ISOLATION HOSPITAL. PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of Temporary SENIOR HOUSE OFFICER from Male registered medical practitioners who have preferably been qualified for 1 year and have had previous hospital experience. The applicant should be able to drive a car. Quarters are available for an unmarried man. The duties, in 2 departments, will be chiefly in connection with infectious, venereal and chest diseases.

Applications, together with copies of 2 recent testimonials, should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, immediately.

PLYMOUTH. SCOTT ISOLATION HOSPITAL. RESIDENT HOUSE PHYSICIAN (Male, unmarried), immediate vacancy. Recognised pre-registration post which offers excellent experience.

Applications should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. HOUSE OFFICER in Obstetrics and Gynæcology, vacant 1st July, 1956. Recognised for the Membership of the Royal College of Obstetricians and Gynæcologists. Wide experience can be obtained in obstetrics, including antenatal and post-natal clinics.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st July, 1956. Recognised for the D.A. and F.F.A.R.C.S. The appointment will be for a period of 12 months. South Devon and East Cornwall Hospital, Plymouth.

SENIOR HOUSE OFFICER in Surgery, vacant immediately. Recognised for the F.R.C.S. Devonport Section.

SENIOR HOUSE OFFICER in Casualty, vacant 1st July, 1956. Recognised for the F.R.C.S. The Central Casualty Department, South Devon and East Cornwall Hospital, Freedom Fields, Plymouth.

HOUSE SURGEONS (pre-registration posts), 2 vacancies 1st July, 1956. Recognised for the F.R.C.S. Freedom Fields Section.

HOUSE PHYSICIAN (pre-registration post), vacant 1st July, 1956. Greenbank Road Section.

HOUSE SURGEONS (pre-registration posts), vacancies 12th June, and 1st July, 1956. Recognised for the F.R.C.S. Greenbank Road Section.

RESIDENT DENTAL HOUSE SURGEON, vacant 8th July, 1956. This appointment is recognised by the Royal College of Surgeons as fulfilling the requirements of candidates for the Fellowship of Dental Surgery. Greenbank Road Section.

HOUSE SURGEON (pre-registration post), vacant 1st June, 1956. Recognised for the F.R.C.S. Devonport Section.

Plymouth Maternity Department

HOUSE OFFICER in Obstetrics, vacant 10th June, 1956. Alexandra Maternity Home, Devonport, also Flete Maternity Home, Ermington.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital (61 E.N.T. Beds)
SENIOR HOUSE OFFICER (E.N.T. Department), vacant now.

Queen Alexandra Hospital (87 surgical beds)
HOUSE SURGEON (pre-registration), vacant now.

Queen Alexandra Hospital (78 medical beds)
HOUSE PHYSICIAN (pre-registration), vacant 23rd April, 1956.

Saint Mary's Hospital (74 medical beds)
SENIOR HOUSE PHYSICIAN, vacant now.

Saint Mary's Hospital (130 surgical beds)
HOUSE SURGEON (pre-registration), vacant 9th May, 1956.

Saint Mary's Hospital
SENIOR HOUSE OFFICER for Pædiatric Department (53 Beds), including oversight of neonatal problems in a large Maternity Department. Vacant 16th May, 1956.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

35, Grove-road, South, Southsea.

PRESTWICH (MENTAL) HOSPITAL. Junior Hospital MEDICAL OFFICER or SENIOR HOUSE OFFICER required. Single quarters available. All modern treatments practised, and study facilities granted.

Applications, giving full personal details and the names and addresses of 2 referees, should be sent to the Medical Superintendent, Prestwich Hospital, P.O. Box No. 1, Prestwich, Manchester, immediately.

PAISLEY AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. Applications are invited for JUNIOR HOSPITAL MEDICAL OFFICER posts at the following hospitals :—

(*a*) Orthopædic Unit, Royal Alexandra Infirmary, Paisley.
(*b*) Darnley Sanatorium, Nitshill, Glasgow.
(*c*) I. D. Hospital, Johnstone.

Applications, stating age, date of qualification, experience, &c., should be submitted to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

READING. ROYAL BERKSHIRE HOSPITAL. (405 Beds.) Applications are invited from registered and provisionally registered medical practitioners, Male or Female, for post of RESIDENT HOUSE SURGEON (E.N.T.), vacant immediately, for period of 6 months. Salary £425–£525 p.a., less £125 board-residence.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road, REDHILL, SURREY. SENIOR HOUSE OFFICER. Mainly general and orthopædic surgery, with some general medicines. Vacant 1st May.

Apply to Hospital Secretary, quoting 2 referees.

ROTHERHAM CLINICAL LABORATORY, Moorgate GENERAL HOSPITAL, ROTHERHAM. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (pathology) required with duties at associated clinical laboratories within the area of the Rotherham and Mexborough Hospital Management Committee. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th April, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ROTHERHAM HOSPITAL, Doncaster Gate, Rotherham. (161 Beds. Recognised for training for the F.R.C.S. examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics and casualty) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th April, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. ARBROATH INFIRMARY—General Surgery. Applications are invited for the post of SENIOR REGISTRAR in General Surgery at Arbroath Infirmary (105 Beds—40 general surgical). This is a " transitional " post and a higher surgical qualification and previous experience are essential. Salary £1400 p.a.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 14th April, 1956.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

REGISTRAR in Medicine based at Law Hospital, Carluke.
REGISTRAR in Radiotherapy based at the Western Infirmary, Glasgow.
REGISTRAR in Pathology based at Stobhill Hospital, Glasgow.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th April, 1956.

SOUTHEND GENERAL HOSPITAL. Applications are invited for the post of Temporary CASUALTY OFFICER (Registrar) for a period of 6 months. Post vacant 6th May, 1956. Duties chiefly in Casualty Department, which is under the supervision of the Consultant in Orthopædic Surgery. Opportunities for work in fracture clinics in association with work of Orthopædic Department. The post is recognised for the F.R.C.S. if held for 6 months.

Applications, stating age, qualifications and experience, to be sent to the undersigned by 12th April, 1956.

J. C. FIELD, Secretary.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE OFFICER to the E.N.T. Department. Post is recognised for D.L.O. and F.R.C.S., and is vacant 1st May, 1956.

Applications, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, Wilts.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (262 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE PHYSICIAN (1 of 2), pre-registration or Senior House Officer. Busy department with medicine, pædiatrics, skins and eyes. Busy outpatient clinics offering good experience.

Applications, naming 2 referees, to Group Secretary.

SHEFFIELD. CITY GENERAL HOSPITAL. Applications are invited for the resident appointment of HOUSE SURGEON (general surgery). Recognised pre-registration post. Vacant immediately.

Apply, giving full details of age, nationality, qualifications, present and previous appointments (if any), and the names of 2 persons for reference, to the undersigned at Nether Edge Hospital, Sheffield, 11. W. STANSFIELD, Secretary.

SHEFFIELD. CITY GENERAL HOSPITAL. DEPARTMENT OF PATHOLOGY GROUP LABORATORY. Applications are invited for the appointment of SENIOR HOUSE OFFICER (clinical pathology), vacant mid-April, 1956. Resident accommodation is available and optional. Opportunities for training in morbid anatomy, biochemistry, hæmatology and bacteriology. The work at this and the associated hospitals offers excellent experience to graduates who wish to make pathology their permanent career. The post is recognised for the D.Path.

Apply, giving details of age, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, to the Group Secretary at Nether Edge Hospital, Sheffield, 11.

SHEFFIELD. CITY GENERAL HOSPITAL. (652 Beds. Recognised for D.Path.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (pathology) required with duties at other hospitals in the Sheffield area. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th April, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR REGISTRAR in Psychiatry required for Middlewood Hospital, Sheffield (2098 Beds). D.P.M. essential. House available. Appointment for 1 year in the first instance, reviewable annually. Opportunity for research and experience in the special branches of psychiatry available in the Hospital area.

Application forms and further details obtained from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 16th April, 1956.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the post of REGISTRAR in Dermatology at the Royal Infirmary Unit. Previous experience desirable but not essential.

Applications, stating age, qualifications and experience, with the names of 3 referees, to be sent not later than 19th April, 1956, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the post of REGISTRAR to the E.N.T. Department, Royal Hospital Unit.

Applications, stating age, qualifications and experience, with the names of 3 referees, to be sent not later than 19th April, 1956, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. WHARNCLIFFE HOSPITAL. (128 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SURGICAL REGISTRAR required with additional orthopædic duties. Single accommodation available. Appointments for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th April, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer). Post recognised for F.F.A.R.C.S. Vacant 1st June, 1956.

Applications and copy testimonials to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SKIPTON (near). THE HOSPITAL, Grassington. Applications invited for RESIDENT MEDICAL OFFICER at above Hospital. Appointment is that of Senior House Officer or Junior Hospital Medical Officer, according to experience. The Hospital caters for tuberculous patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) 2 RESIDENT HOUSE PHYSICIANS required mid-April; pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton, as soon as possible.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners to undertake 1 weekly session in Anæsthetics at Teignmouth Hospital. Previous experience in Anæsthetics is essential. Payment will be at the rate of £175 p.a. per weekly 3½-hour session.

Applications, stating date of birth, qualifications and experience together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 21st April, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Orpington and Sevenoaks Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 21st April, 1956.

SOUTH RUISLIP, MIDDLESEX. THE USAF HOSPITAL, SOUTH RUISLIP, MIDDLESEX, has a vacancy on the medical staff for a qualified General Practitioner.

Interested medical officers should write to the Hospital Commander, U.S. Air Base, South Ruislip.

STOCKTON-ON-TEES. STOCKTON AND THORNABY HOSPITAL. (130 Beds.) TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE OFFICER (surgical) at the above Hospital. The appointment is recognised for Pre-registration Service under the Medical Act, 1950.

Applications, stating full details, and giving 2 names for reference, to be addressed to the Hospital Secretary.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Applications invited for HOUSE OFFICER (medical), vacant now. Recognised pre-registration post.

Detailed applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER in Orthopædics. Recognised F.R.C.S.

Applications, with names of 2 referees, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

SUNDERLAND. ROYAL INFIRMARY. (300 Beds.) HOUSE OFFICER (Male) required immediately for duties in Gynæcological and Urological Units. Provisionally registered practitioners may apply.

Applications, naming 2 referees, to the Hospital Secretary, Royal Infirmary, Sunderland.

SWANSEA HOSPITAL, Swansea. (403 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Gynæcological Department of the above Hospital.

Applications, stating age, and experience together with copies of 2 recent testimonials, should be addressed to the Hospital Secretary.

SWANSEA HOSPITAL, Swansea. (403 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Traumatic and Orthopædic Department of the above Hospital. Vacancy 1st May, 1956. The post is recognised under the F.R.C.S. regulations for 6 months casualty training. It offers exceptional experience in all aspects of traumatic surgery as occurring in a large industrial centre and port.

Applications, stating age and experience, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

SWANSEA HOSPITAL, Swansea. (403 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital. The post is recognised for Pre-registration Service.

Applications, with full particulars together with copies of 2 recent testimonials, should be addressed to the Hospital Secretary.

SWINDON HOSPITAL GROUP. (537 Beds.) Applications invited for 2 appointments, vacant 23rd April, 1956, of RESIDENT SENIOR HOUSE OFFICERS as Casualty Officers and Orthopædic House Surgeons at Great Western Hospital, Swindon. Posts recognised by R.C.S. for 6 months of years training under Fellowship regulations. Work of Accident and Orthopædic Department, associated with Nuffield Orthopædic Centre (Wingfield Morris Orthopædic Hospital), Oxford, includes large number of industrial injuries. Salary £745 p.a., less £145 p.a. for residential emoluments.

Full details and names of 3 referees to Secretary, 7, Okus-road, Swindon, Wilts, as soon as possible.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN required. Preference given to persons seeking pre-registration post.

Applications, stating age, experience and qualifications, with dates, with copies of 2 testimonials, to Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. Locum REGISTRAR required to Unit of Obstetrics and Gynæcology (35 obstetric and 25 gynæcological beds) 7th May–4th June. Resident post.

Applications, with copies of 2 testimonials, to Secretary.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of HOUSE OFFICER (E.N.T.), vacant 21st May, 1956. Pre-registration appointment, recognised for F.R.C.S. and D.L.O.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton, Somerset.

TYNEMOUTH VICTORIA JUBILEE INFIRMARY. (115 Beds.) SENIOR HOUSE OFFICER required in May, 1956, for orthopædic and casualty duties.

Applications to Group Secretary, Preston Hospital, North Shields.

TORQUAY. TORBAY HOSPITAL. Senior Resident HOUSE OFFICER (medicine) required 7th April, 1956. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, age, nationality, with copy testimonials (quoting ref. F.955/68) to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

TREDEGAR, MONMOUTHSHIRE. ST. JAMES HOSPITAL (near CARDIFF AND NEWPORT). HOUSE PHYSICIAN (pre-registration candidate if available) required immediately at above Hospital. 160 Beds for acute medicine, obstetrics and geriatrics. Married quarters available.

Apply, stating age, qualifications, experience and the names of 2 referees, to the Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee at Central Offices, Caerphilly-road, Ystrad Mynach.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. SENIOR HOUSE OFFICER required for Orthopædic Department. Salary £745 p.a. Residential accommodation charged for at the rate of £155 p.a.

Apply to undersigned, giving full details of training, experience, &c., and 2 names and addresses for reference.

W. BOWRING, Group Secretary.

Victoria Chambers, Wood-street, Wakefield.

WALSALL. MANOR AND GENERAL HOSPITALS. Locum HOUSE SURGEONS required.

Applications to Group Secretary, Walsall General (Sister Dora) Hospital.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of RESIDENT CASUALTY OFFICER (Male or Female), vacant in early May. The post is graded Junior Hospital Medical Officer. Scale of salary £775 by £50 rising to £1075, less deduction of £130 for residential emoluments. Applications will also be considered from Junior Medical Officers who would be graded House Officer or Senior House Officer at the scale appropriate to the experience of the applicant. Consideration will also be given to applicants who desire the appointment on a short-term basis. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience and qualifications should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital (Tel. No. Warrington 1666),
Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited from persons experienced in anæsthetics for the post of RESIDENT ANÆSTHETIST (Male or Female). Graded as Senior House Officer. The Hospital is recognised for the D.A. examination. Salary is £745 p.a., less a deduction of £130 p.a. for residential emoluments.

Applications, stating qualifications and experience, should be sent to— H. L. BOOT, Group Secretary,

Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WILLERBY, EAST YORKSHIRE (near Hull). DE LA POLE HOSPITAL. (1174 Beds—mental illness and nervous disorders.) JUNIOR HOSPITAL MEDICAL OFFICER. Hospital has admission-rate of over 850 annually. Modern reception hospital, villas and neurosis unit. All modern methods of treatment practised. Accepted for D.P.M. training. Residential.

Application forms from Group Secretary, Hull B Hospital Management Committee, at the above address.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) HOUSE OFFICER (anæsthetics). Post vacant 10th May. The Hospital is recognised for the F.F.A.R.C.S. and D.A.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) OBSTETRICS AND GYNÆCOLOGY HOUSE OFFICERS (2) required. Both posts may be pre-registration. Vacant 30th May and 1st June respectively. The Hospital is recognised for the D.Obst.R.C.O.G.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant 1st June.

Applications, with copies of 2 testimonials, to the Secretary.

WOKING VICTORIA HOSPITAL, Woking, Surrey. (72 Beds.) SENIOR HOUSE OFFICER (post-registration appointment) required for medical and surgical duties.

Apply, with 2 testimonials, to Hospital Secretary.

Public Appointments

AUSTRALIA. DIVISION OF MENTAL HYGIENE. DEPARTMENT OF PUBLIC HEALTH, NEW SOUTH WALES. MEDICAL OFFICERS (Male). Salary £A2526 p.a. Applications are invited from Medical Officers, registered or eligible for registration in the State of New South Wales, for positions of Deputy Medical Superintendent, Division of Mental Hygiene. Possession of Diploma of Psychological Medicine or equivalent qualification essential. Applicants must be of senior standing in the profession and should have had at least 5 years administrative experience. Appointments may be Metropolitan or Country. Residence available at a reasonable charge. Appointees will be eligible, subject to medical fitness, to contribute to the State Superannuation Fund. First-class shipping fares to Sydney of appointees and families will be paid.

Applications (4 copies), including the names of 2 referees, should be lodged at the Office of the Agent-General for New South Wales, 56/57, Strand, London, W.C.2, by 14th April, 1956. No special forms of application are available. Please quote No. 44/51 when applying.

AUSTRALIA. DIVISION OF MENTAL HYGIENE, DEPARTMENT OF PUBLIC HEALTH, NEW SOUTH WALES. MEDICAL OFFICER (Male). Salary £A2826 p.a. Applications are invited from Medical Officers registered or eligible for registration in the State of New South Wales. Applicants must be of senior standing in the profession and must have had at least 6 years specialised experience in the administration of facilities for the care and treatment of mental defectives and should be qualified to plan and supervise a programme for inpatient and outpatient treatments. Possession of the Diploma of Psychological Medicine or equivalent qualification is essential. Residence available at a reasonable charge. Appointee will be eligible, subject to medical fitness, to contribute to the State Superannuation fund. First-class shipping fare to Sydney of appointee and family will be paid.

Applications (4 copies), including the names of 2 referees, should be lodged at the Office of the Agent-General for New South Wales, 56/57, Strand, London, W.C.2, by 14th April, 1956. No special forms of application are available. Please quote No. 44/52 when applying.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Whole-time ASSISTANT MEDICAL OFFICER (Male or Female) for maternity and child welfare. Applicants should have had experience in work with mothers and children, including a 6 months resident post in a maternity hospital and in a children's hospital. The D.P.H. will be considered an additional qualification. The duties will be mainly in connection with maternity and child welfare as well as the medical aspects of the care of deprived children. Salary £975–£50–£1375 p.a. according to qualifications and experience. Pension scheme (including Widows and Orphans); medical examination.

Form obtainable from Medical Officer of Health, Council House, Birmingham, 3. Applications with 3 recent testimonials to be returned by 23rd April, 1956.

GOLD COAST LOCAL CIVIL SERVICE. Gold Coast MEDICAL SERVICE. Applications are invited for the following posts in the Ministry of Health, Gold Coast.

RADIOLOGIST to take charge of Hospital X-ray Departments and to train junior staff as X-ray attendants. Candidates must possess D.M.R.D. or equivalent higher qualification.

PATHOLOGIST to carry out routine duties of Clinical Pathologists including hæmatology, bacteriology, histopathology and biochemistry. May be required to perform post-mortem examinations and other duties in connection with forensic medicine. Candidates must have had at least 2 years full-time approved Laboratory experience.

Appointment is to the Gold Coast Civil Service on contract for 2 tours from 18 to 24 months each in the first instance with gratuity (taxable) on satisfactory completion of service. Gratuity would be at the rate of £12 10s. for each completed month of service. Basic salary scale would be £1330–£2310 a year. Candidates in the National Health Service may leave the National Health Service but retain their superannuation rights (up to a maximum stay of 6 years). Salary, in this case, would be in the scale £1055–£1850 a year, with gratuity (taxable) of 20% of the aggregate of salary after engagement. Starting-point in salary scales are determined according to qualifications and experience. Quarters when available are provided at rental not exceeding £120 a year. Income-tax at local rates. Free passages provided for Officer, wife, and up to 3 children under 13 years of age. Generous home leave.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/13/07).

MINISTRY OF LABOUR AND NATIONAL SERVICE. MEDICAL BOARDS AND DISABLEMENT ADVISORY COMMITTEES. From time to time vacancies occur in the Panels of Medical Practitioners who are prepared to serve, as required, as Members of National Service Medical Boards. Such Boards meet at intervals according to the requirements of the area and payment is on a sessional basis. A general practitioner wishing to be considered for any vacancy which might arise in the panel of the Medical Board nearest to the district in which he resides, should make his wish known to the appropriate Local Medical Committee or to the Secretary, Ministry of Labour and National Service, Baynards House, 1–13, Chepstow-place, Westbourne-grove, London, W.2.

Occasional vacancies also occur in the Membership of that Department's Disablement Advisory Committees and their Panels. A general practitioner wishing to be considered for such appointment should similarly apply to his Local Medical Committee or the Secretary, Ministry of Labour and National Service, 32, St. James's-square, S.W.1.

MANCHESTER. CITY OF MANCHESTER HEALTH DEPARTMENT. MEDICAL OFFICER (maternity and child welfare). Applications are invited from registered medical practitioners (Male or Female) for the above position on the permanent staff. Applicants should have obstetric and/or pædiatric experience and will be required to undertake duties principally in Maternity and Child Welfare Clinics. Possession of the D.Obst.R.C.O.G., D.P.H. or D.C.H. qualifications will be an advantage. Salary scale £975 rising to £1375 p.a. The appointment is subject to a medical examination and the City Council's conditions of service.

Application forms obtained on request, must be returned to the Town Clerk, Town Hall, Manchester, 2, and not to any member of the Council within 21 days of the appearance of this advertisement. Envelopes must be endorsed "Medical Officer, Nursing Services Division." Canvassing is prohibited.

NOTTINGHAM. CITY OF NOTTINGHAM EDUCATION COMMITTEE. Applications are invited for the post of Whole-time SCHOOL MEDICAL OFFICER on the salary scale £975–£50–£1375 p.a. The appointment will be subject to the provisions of the Local Government Superannuation Acts.

Further particulars and forms of application may be obtained from the Principal School Medical Officer, 28, Chaucer-street, Nottingham. F. STEPHENSON, Director of Education.

GOVERNMENT OF BAHRAIN. MEDICAL DEPARTMENT, BAHRAIN, PERSIAN GULF. The Government of Bahrain invites applications from British Doctors for the posts of :—

(1) OPHTHALMOLOGIST (D.O.M.S.). Age 28–50. Starting salary at age 28 = £2150 p.a. reaching £3140 with proportionate increments at £45 p.a.

(2) Male REGISTRAR (F.R.C.S.). Age 28–40. Starting salary at age 28 = £2150 p.a. reaching £3140 with proportionate increments at £45 p.a.

(3) Lady DOCTOR (F.R.C.S. or M.R.C.O.G.). Age 28–50. Starting salary at age 28 = £2150 p.a. reaching £3140 with proportionate increments at £45 p.a.

(4) Lady DOCTOR MEDICAL OFFICER. Age 28–40. Starting salary at age 28 = £1550 p.a. reaching £2090 with proportionate increments at £45 p.a.

No allowances. No income-tax. Pension scheme. European private practice only. Free flat with hard furnishings and transport. Agreement for 2 years, renewable, with 5 months home leave on full pay and free air passages.

Applications, with 3 testimonials and photograph, should be addressed direct to the Chief Medical Officer, Bahrain Government. R. H. B. SNOW, Chief Medical Officer, Bahrain Government.

GOVERNMENT OF ADEN. Assistant Health Adviser required in the Western Aden Protectorate to undertake executive and advisory duties. The post is of a pioneering nature involving much organising and touring. The Officer selected must have had overseas experience and of course experience in Arab countries and a knowledge of Arabic would be added recommendation. Candidates must possess qualifications registrable in the United Kingdom. Appointment can be made on a permanent basis with pension, or on short-term contract with gratuity (taxable) on satisfactory completion of service. Candidates in the National Health Service may leave the National Health Service but retain their superannuation rights (up to 6 years) and receive a gratuity (taxable) of 20% of the aggregate of their salary at the end of their engagements. Salary scale ranges from £1212 to £1992 a year, starting salary depending upon candidates age and experience. Pension in the case of permanent appointment is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. The gratuity in respect of contract appointment is at the rate of £37 10s. for each completed 3 months of service. An outfit allowance of £30–£60 is payable on appointment. Protectorate allowance of £132, £156, or £180 a year is payable according to area in which working. This is non-pensionable. Furnished quarters (being built) at low rental. Income-tax at local rates. Free passages are provided for Officer, wife, and up to 4 children under the age of 18. Tour of service is from 18 to 24 months. Generous home leave is granted after each tour.

Application forms from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/2/08).

GOVERNMENT OF THE EASTERN REGION OF NIGERIA. MEDICAL OFFICERS OF HEALTH are required in Eastern Nigeria to undertake general administration of environmental hygiene, maternal and child welfare, school health work, health education and the control of communicable diseases. At present emphasis is being placed on the development of a School Health Service and on tuberculosis control. Officers may also be required to visit rural areas around the township where their principal responsibility lies. Candidates must possess medical qualifications registrable in the United Kingdom and a Diploma in Public Health. Women candidates who might concentrate on school health and welfare duties will be considered

Appointment is on contract for 2 tours of not more than 2 years

Salary scale ranges from £1434 to £2118 a year, and a gratuity (taxable) is payable on completion of satisfactory engagement at the rate of £37 10s. for each completed period of 3 months service (including leave).

Quarters provided at rental of 10% of salary. Taxes at local rates. Annual local leave permissible ; generous home leave granted after each tour. Free return passages for Officer and wife ; and, when appropriate either (but not both) of the following in any 1 tour of service :—

(*a*) 1 return sea passage for each of 2 children under the age of 18 subject to a maximum of £75 in respect of the return journey for each child, or

(*b*) An allowance of £75 a year for each of 2 children under the age of 18 maintained outside Nigeria for the whole of the tour.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/411/05).

NAIROBI. COUNTY COUNCIL OF NAIROBI. Applications for the appointment of COUNTY MEDICAL OFFICER OF HEALTH are invited from candidates, preferably between 35 and 45 years of age, who should be registered medical practitioners and should hold a Diploma in Public Health. Administrative or local government experience an advantage. The successful applicant will be required to administer Council's Public Health Department and Services and to carry out curative and preventive public health duties at Council's institutions within the County. The basic salary of the post is £1700–£100–£2300 p.a. plus temporary cost-of-living allowance of £162 p.a. and housing allowance of 10% of basic salary. Commencing salary according to qualifications and experience. The appointment is permanent but subject to a probationary period of not less than 6 months service. 3 months overseas leave, inclusive of voyage on full pay is granted after each tour of 2 years with passage allowance up to maximum of 3 adult passages.

Further particulars regarding local leave, superannuation, medical benefits and other terms and conditions of service will be issued with application forms which may be obtained from the Crown Agents, 4, Millbank, London, S.W.1, and which should be sent to the Clerk of the Council, P.O. Box 1362, Nairobi, Kenya, so as to reach him not later than NOON on Saturday, 28th April, 1956, and endorsed "County M.O.H." Canvassing, either directly or indirectly, will be a disqualification.

TOTTENHAM. BOROUGH OF TOTTENHAM. Applications are invited for the post of DEPUTY MEDICAL OFFICER OF HEALTH from duly registered medical practitioners holding the Diploma of Public Health. The officer appointed will be required to devote 30% of his time to the work of the Area Health Service of the Middlesex County Council as an Assistant Medical Officer. The combined salary will be not less than £1461 10s. 3d. p.a. rising by annual increments to £1791 15s. 3d. p.a. The appointment is subject to the provisions of the Local Government Superannuation Acts, 1937 to 1953, and to the passing of a medical examination. Details of the terms of the appointment may be obtained from the Medical Officer of Health, Town Hall, Tottenham, N.15.

Applications must be received by the undersigned in envelopes endorsed "Deputy Medical Officer of Health" not later than NOON on Saturday, 28th April, 1956. Canvassing disqualifies.

M. LINDSAY TAYLOR, Town Clerk.

Town Hall, Tottenham, N.15.

TREASURY MEDICAL SERVICE. Applications are invited from Medical Practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time ; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Beccles (Beccles).
Wrentham and Wangford (Beccles).
Brentwood (Brentwood).
Newport (Cardigan).
Liskeard (Liskeard, Cornwall).
Newbiggin-by-the-Sea (Morpeth).

SCOTLAND

Haddington (Haddington).
Kirkcowan (Newton Stewart).
Bridgend (Port Ellen).

HER MAJESTY'S OVERSEA CIVIL SERVICE. (Medical BRANCH.) NIGERIAN FEDERAL SERVICE. Applications are invited from doctors with medical qualifications registrable in the United Kingdom for the following posts in the Nigerian Federal Service :—

MEDICAL OFFICER (Southern Cameroons) for general medical duties in hospitals and/or rural health duties.

MEDICAL OFFICER OF HEALTH (Southern Cameroons) for administration of preventive medical services and control of sanitary matters ; or, if posted to sea or airport, the duties of Port Health Officer. May be required to perform duties of Medical Officer (see above). Candidate should hold a Diploma in Public Health, and a Diploma in Tropical Hygiene is desirable.

ANÆSTHETIST to administer anæsthetics in Government Hospitals in Lagos, to instruct junior medical officers and to perform such other duties as may be assigned to him. Candidates must possess the Diploma in Anæsthetics (if obtained prior to November, 1953) or Fellowship of the Faculty of Anæsthetists. The selected candidate will be appointed either Special Grade Medical Officer or as a Specialist.

SPECIALIST ALIENIST to undertake investigations on mental illness in Nigeria ; to examine and treat mental cases ; to advise on matters connected with mental health with particular reference to organisation and expansion of Mental Health Services, training of staff and legislation. Candidates must possess a Diploma in Psychological Medicine or equivalent qualifications.

Appointments may be made as follows :—

(*a*) On 3 years probation for permanent and pensionable employment. Pensions (non-contributory) are at the rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From the National Health Service. Candidates may leave the National Health Service but retain their superannuation rights up to 6 years and receive a gratuity (taxable) of 20% of the aggregate of their salary.

Salaries including inducement addition for officers appointed under (*a*) and (*b*) range from £1128 to £1950 p.a. for Medical Officers and from £1326 to £1950 p.a. for Special Grade Medical Officers. Specialist salary is £2220 p.a.

(*c*) On short-term contract (2 tours of 18–24 months duration) with inclusive salary of from £1338 to £2286 p.a. for Medical Officers and £1536 to £2286 p.a. for Special Grade Medical Officers. Specialist salary is £2664 p.a. On completion of contract a gratuity (taxable) is paid at the rate of £37 10s. for each completed period of 3 months service (including leave).

Officers appointed under (*a*) or (*c*) are required to contribute to a Widows' and Orphans' Pension Scheme.

Quarters are provided at low rents. Free return passages are provided for officer and his wife. Return passages paid for officer's children, up to the age of 18, provided this does not exceed in all the cost of 2 adult return passages in any 1 tour of service. A children's (separate domicile) allowance is also payable at the rate of £75 a year for each of up to 2 children under 18, ceasing if the children join their parents in Nigeria. Income-tax at low local rates. Local leave is permissible and generous home leave is granted after each tour.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/14/01).

HER MAJESTY'S OVERSEA SERVICE. Western Region OF NIGERIA. The following vacancies for Specialists exist in the Medical Department of the Western Region Public Service :—

(1) SPECIALIST OBSTETRICIANS for obstetrical and gynæcological duties, including outpatient, maternity, child welfare, and antenatal work in the larger provincial hospitals of the Region (which are being enlarged up to 200 beds), and to assist in the training of midwives. Candidates should have registrable medical qualifications and the M.R.C.O.G., with considerable experience of major surgery in their specialty, and have had at least 6 years post-registration experience.

(2) SPECIALIST OTOLARYNGOLOGIST required as Regional Consultant in E.N.T. work. The selected officer will be based on Benin where he will have charge of beds. He should be prepared to travel to assist medical officers in general hospitals in this aspect of their work, and patients requiring specialist treatment will be referred to him by medical officers. Candidates should have registrable medical qualifications and the F.R.C.S. with 6 years experience in the specialty since registration.

Appointments may be made as follows :—

(*a*) from the National Health Service. Candidates may leave the National Health Service but retain their superannuation rights up to 6 years and receive a gratuity (taxable) of 20% of the aggregate of their salary, or

(*b*) on short-term contract (1 tour in the first instance of 12–24 months duration according to age).

Salary for officers appointed under (*a*) is £2220 a year, and officers appointed under (*b*) receive a somewhat higher salary and a gratuity (taxable) on satisfactory completion of contract. This gratuity is at the rate of £37 10s. for each completed period of 3 months service (including leave).

Officers appointed under (*b*) are required to contribute to a Widows' and Orphans' Pension Scheme.

Quarters provided at rental of £150 a year. Taxes at local rates. Annual leave permissible : generous home leave granted after each tour of 12–24 months. Free passages for officer on first appointment, on duty and on leave, and free return passages for officer's wife in each tour of service. Generous allowances also given for return passages of officer's children.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/410/020).

NEWCASTLE. CITY AND COUNTY OF NEWCASTLE UPON TYNE. Applications are invited from registered medical practitioners duly qualified in accordance with the provisions of the Local Government Act, 1933, for the appointment of MEDICAL OFFICER OF HEALTH AND PRINCIPAL SCHOOL MEDICAL OFFICER. The salary for the appointment in accordance with the latest Industrial Court Award, is £2400 rising by 2 annual increments of £100 and 1 of £50 to £2650. The appointment is subject to the Local Government Superannuation Acts and the successful candidate will be required to pass a medical examination.

Further particulars as to the duties and conditions of appointment may be obtained on application to—

JOHN ATKINSON, Town Clerk.

Town Hall, Newcastle upon Tyne, 1.

RESEARCH BRANCH. HER MAJESTY'S OVERSEA SERVICE. EAST AFRICA HIGH COMMISSION. MEDICAL RESEARCH OFFICER required for the East Africa Medical Survey and Research Institute. The selected officer should have laboratory experience and be prepared to undertake laboratory work of a biochemical type either independently or in collaboration with the Director, Dr. E. G. Holmes, M.D., M.R.C.P. He should also have training as a Bacteriologist, be interested in Bacteriological Research, and be ready to explore the field of Bacterial Disease in East Africa. Candidates must possess medical qualifications registrable in the United Kingdom, and should for preference hold the Diploma in Bacteriology.

Terms of Appointment. Either (i) on probation, or (ii) temporary appointment, on terms applicable to the Research Branch of Her Majesty's Oversea Civil Service.

Emoluments. Consist of salary and overseas research allowance in the range £1115–£1940 a year. Point of entry into the salary scale depends upon qualifications and experience. Variable non-pensionable cost-of-living allowance, at present 10% of gross emoluments up to a maximum allowance of £162 a year. Contributory superannuation scheme for candidate appointed on probation or a gratuity of 13¼% of salary for temporary appointment. Government quarters if available at rental of 10% of basic salary ; if not, an allowance is paid. Free passages for Officer, wife, and children under the age of 13.

Application forms obtainable from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.195/213/02).

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Medical Officers required by Falkland Islands Dependencies Survey for tour of 18 or 30 months service in Antarctic bases. To leave U.K. in October, 1956. Salary £625 a year. Free passages, quarters, messing, and canteen stores. Liberal leave on full salary. Candidates must possess qualifications registrable in the United Kingdom.—Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3/43214/LD.

Senior Pharmacologist. May & Baker Ltd., Dagenham, Essex, invite applications for the post of Senior Pharmacologist. Candidates should have research experience, and the duties of the person appointed will be to conduct research and to assume the responsibilities of Head of a department. Facilities for research are being extended by the erection of new biological laboratories. Salary will be commensurate with qualifications and experience.—Apply initially in writing to the Personnel Officer, quoting reference No. 771.

Doctor required for Tuberculosis Sanatorium, Korea. Experience in Chest Diseases. Salary £1000–£1500 depending on qualifications. 2-year contract.—Apply : Foreign Relief Secretary, THE SAVE THE CHILDREN FUND, 12, Upper Belgrave-street, London, S.W.1.

A well-known British ethical pharmaceutical company invites applications from Physicians for the position of Medical Liaison Officer. The principal duties comprise initiation and supervision of clinical work on new research compounds and established products in the therapeutic and nutritional fields involving liaison with Consultants and Clinicians in hospitals, research establishments, &c. Based on London, a considerable amount of travelling at home and occasionally abroad will be necessary. This is a full-time, progressive appointment and the company operates an excellent non-contributory pension scheme. Salary according to qualifications and experience but not less than £1500 p.a.—Candidates, preferably aged 30–40, should write, giving full details, to : Address, No. 207, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Cyprus Mines Corporation. It is proposed to appoint an Assistant Medical Officer for work at the Corporation's Mines in Cyprus. The engagement is for an initial tour of 3 years with the possibility of renewal. Applicants should have had some post-graduate experience in midwifery. Salary scale is within the range of £1200–£1800 p.a. depending upon experience and qualifications. Limited private practice may be permitted.

Applications, together with names of 2 referees, should be submitted before 15th April to WILKENS & DEVEREUX, LTD., Trafalgar House, Waterloo-place, London, S.W.1, from whom further information may be obtained.

Australian Red Cross Society. New South Wales Division. Applications are invited for the position of Assistant Director in the Blood Transfusion Service. The position is full-time without the right of private practice and the salary is £2500 p.a. Australian currency. The successful applicant will be expected to assist the Director in the supervision of blood collection and laboratory procedures. Experience in laboratory methods is essential.

Written applications should be addressed to the General Secretary of the Australian Red Cross Society, New South Wales Division, 27, Jamison-street, Sydney, N.S.W., and should state age, academic record, war service (if any) and post-graduate experience, especially in laboratory methods.

New Zealand Physician with G.P.-specialist medical practice wishes exchange practice with Physician in Great Britain. House and consulting-rooms available. Income £6000. —Address, No. 205, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

General Surgeon required by British East African Seaport Practice of 4 Doctors to replace retiring partner. Willingness to undertake general practice until fully established is essential.—Address, No. 206, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Representatives. Due to business expansion Sandoz Products Limited invite applications from young men for the appointment of medical representative in the following areas : (*a*) Cambridgeshire, Huntingdonshire, Norfolk and Suffolk ; (*b*) South Wales, including South Welsh counties and Monmouthshire ; (*c*) Oxfordshire, Berkshire, Buckinghamshire, Northamptonshire, and Wiltshire ; (*d*) Glasgow, and North-West Scotland ; (*e*) Aberdeen and North-East Scotland. Attractive salary. Superannuation scheme in operation. Thorough training given. Age not exceeding 32. Applicants should be fully qualified doctors or pharmacists.

Please send full details of age, education, qualifications and experience with photograph (which will be returned) to Staff Manager, SANDOZ PRODUCTS LIMITED, 134, Wigmore-street, London, W.1.

Harley-street. Now vacant. Suite of 3 large rooms, &c., as *pied-à-terre* suitable for residence and practice with amenities and use of waiting-room. Or would be let in separate units.—Full particulars apply : LEY CLARK & PARTNERS, 3, Wimpole-street, W.1 (LANgham 1095).

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Medical Copywriter needed by advertising agency. Will be required to write leaflets and advertisements for ethical medical products.—Write, giving qualifications, experience and salary required, to : the Secretary, ARMSTRONG-WARDEN LTD., 69, New Oxford-street, W.C.1.

Professional, technical and personal typewriting. Duplicating, circularising, &c., efficiently and speedily executed.—"MOWBRAY," 146, Bishopsgate, E.C.2 (BIS. 2545, BAR. 7665).

Typewriting and Duplicating. First-class work at moderate prices by experienced medical typists. Electric machines. —SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

Austin House offer limited number new car deliveries at reduced hire purchase and insurance rates to proven essential user members of Medical Profession. Brochures, application forms free.—Austin House, 142, Golders Green-road, Golders Green, London, N.W.11.

Quakerism. Information respecting the Faith and Practice of the Religious Society of Friends (Quakers) free on application to the Friends Home Service Committee, Room 8, Friends House, Euston-road, London, N.W.1.

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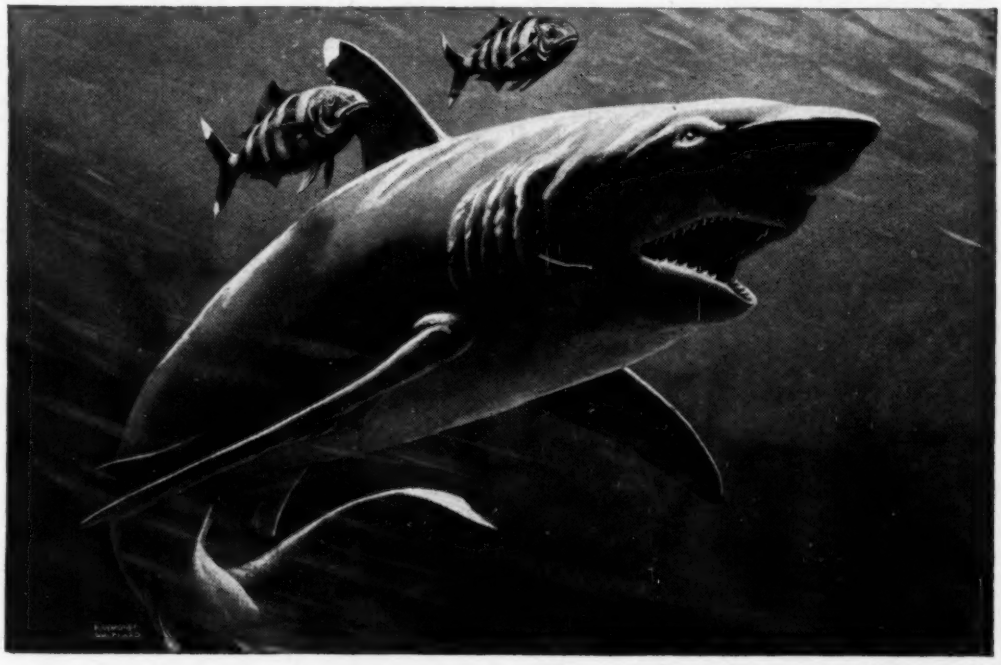

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Practitioner, 173: 46, 1954. Brit. med. J., 2: 7, 1955. Ibid., Editorial, 2: 31, 1955.

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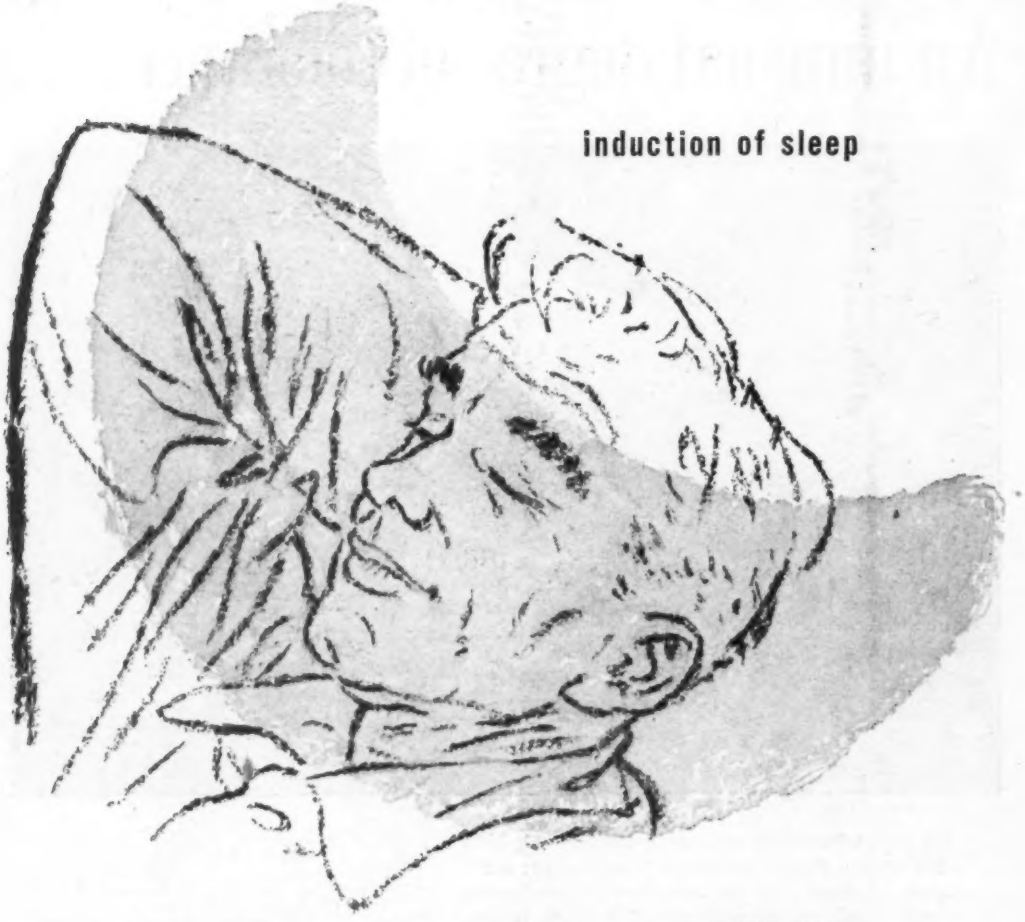

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